tude. Seyffert alſo ſhewed, merely to give pleaſure to Lalande, a clock conſtructed by himſelf, according to a new invention, and having marked on the dial-plate the diurnal diviſion of the day propoſed in France. He had likewiſe with him, of his own workmanſhip, a ſtop-watch with the decimal diviſion, which he preſented to Madame le Français.

Some new inſtruments and maps were alſo exhibited and examined. Among theſe were an ocular heliometer, to be applied to a Herſchel's teleſcope, invented by M. Kohler, and conſtructed by M. Seyffert; the diaphragms of the former, for determining the ſtrength of the light of the ſtars, and his propoſed veſſel for an artificial water horizon; a map of the Rhein Thals, laid down by means of a Hadley's ſextant, by M. Feer, of Zurich; ſome ſheets of a new map of the Duchy of Wurtemberg, by M. Bohnenberger, of Tubingen, meaſured and delineated by means of like inſtruments. The beautiful inſtruments on the ducal obſervatory of Seeberge, near Gotha, and the convenient and proper manner in which they are erected, obliged Lalande to acknowledge that he had never ſeen any where an obſervatory ſo well furniſhed.

Of the new French calendar, and their manner of reckoning by decades, as well as their propoſed decimal diviſion of the day, there was no diſcuſſion. Lalande himſelf muſt have been aware, that as the introduction of this innovation found even in France, and particularly in the provinces, ſo great oppoſition, it would meet with much more in other countries. It would alſo hardly find admiſſion among thoſe who have ſtill any regard for inſtitutions which, thouſands of years ago, the firſt law-givers and aſtronomers declared to be proper for civil life, and which have ſince been retained through all ages. Beſides, this new French calendar, in making the year begin at the entrance of the ſun into the equinoxial point, determined by aſtronomical calculation, brings it back upon no ſolid and ſure grounds; while we, on the other hand, by the very ſimple method of intercalation, can determine common time backwards and forwards for many centuries, and differ only one day from aſtronomical time in the courſe of 3200 years.

The Elector of Saxony has enriched the obſervatory at Leipſic with a conſiderable number of aſtronomical inſtruments, which were before preſerved in the Mathematical-hall at Dreſden.

END OF THE FOURTH VOLUME.

AN

HISTORICAL MISCELLANY

OF THE

CURIOSITIES AND RARITIES,

IN

NATURE AND ART;

COMPRISING

NEW AND ENTERTAINING DESCRIPTIONS

OF THE MOST SURPRISING

VOLCANOES, CAVERNS, CATARACTS, WHIRLPOOLS, WATER-FALLS, EARTHQUAKES, THUNDER, LIGHTNING,

AND OTHER WONDERFUL AND STUPENDOUS

PHENOMENA OF NATURE.

FORMING A RICH AND COMPREHENSIVE VIEW OF ALL THAT IS INTERESTING AND CURIOUS

IN EVERY PART OF THE HABITABLE WORLD.

VOLUME THE FIFTH.

LONDON:

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HISTORY

OF THE

CURIOSITIES AND RARITIES

IN NATURE AND ART.

HISTORY OF SLOW OR SECRET POISONS.

UNDER this name are generally underſtood all poiſons, which can be adminiſtered imperceptibly, and which gradually ſhorten the life of man, like a lingering diſeaſe. They were not firſt diſcovered, in the laſt century, in France and Italy, as many believe; but were known to the ancient Greeks and Romans, by whom they were uſed. We muſt, however, allow that they were never prepared with more art, at any period, or in any country, or employed oftener and with more ſucceſs, than they were in theſe countries, and at that time. If it be true that they can be prepared in ſuch a manner as to occaſion death at a certain period previouſly determined, or as that the perſon to whom they are given will die within a certain time limited, it muſt be confeſſed that the ancient poiſoners have been far exceeded by the modern. But this advantage will be conſidered as ſcarcely poſſible, when one reflects upon the many variable circumſtances which have an influence on the operation of medicines and poiſon; and it has often happened, that a company have ſwallowed the ſame poiſon, at the ſame time, and in the ſame quantity, ſome of whom have died ſooner and ſome later, while ſome have ſurvived. Thus died Pope Alexander VI. in the year 1503, and Ceſar Borgia recovered without any loſs of health, though, by the bottles being changed through miſtake, he drank of the poiſon that had been prepared for the other gueſts alone. At any rate, we are of opinion that the celebrated Tophania, when ſhe engaged to free wives from diſagreeable huſbands within ſtated weeks and days, muſt have had certain and very accurate information reſpecting their conſtitution and manner of living, or, as the phyſicians ſay, their idioſyncraſy.

Some phyſicians have doubted reſpecting ſecret poiſon; and others have only denied that its effects can with certainty be regulated to a fixed time. We agree in opinion with the latter; but the former can be confuted by many examples both of ancient and modern times: for that the ancients were acquainted with this kind of poiſon, can be proved by the teſtimony of Plutarch, Quintilian, and other reſpectable authors. We are told by Plutarch, that a ſlow poiſon, which occaſioned heat, a cough, ſpitting of blood, a conſumption, and a weakneſs of intellect, was adminiſtered to Aratus of Sicyon; and Quintilian, in his declamations, ſpeaks of this poiſon in ſuch a manner as proves that it muſt then have been well known. It cannot be ſaid that ſuch an invention was too great for that period; or that it required a greater ſkill in chemiſtry than any one then poſſeſſed; for the Indians, in America, are acquainted with a moſt perfect poiſon of this kind, and can employ it with ſo much ſkill that the perſon to whom it is given cannot guard againſt the treachery, even with the utmoſt precaution; but infallibly dies, though in a lingering manner, often after the expiration of ſome years. With the poiſon of the Indians, however, the ancients could not be acquainted, as it is prepared from a plant not known in Europe before the diſcovery of America. Kalm, in his Travels, does not name it: and in that he has done right; for, as the plant is now to be found every where, no government could guard againſt a miſapplication of it were it publicly known.

Theophraſtus ſpeaks of a poiſon which could be moderated in ſuch a manner as to have effect in two or three months, or at the end of a year or two years; and he remarks that the death, the more lingering it was, became the more miſerable. This poiſon was prepared from aconitum, a plant which, on that account, people were forbidden to have in their poſſeſſion, under pain of capital puniſhment. They ſay a poiſon can be prepared from aconite (aconitum) ſo as to occaſion death within a certain period, ſuch as two, three, or ſix, months, a year, and even ſometimes two years. Thoſe, we are told, whoſe conſtitutions are able to hold out longeſt, die in the greateſt miſery; for the body is gradually conſumed, and muſt periſh by continual waſting. Thoſe die eaſieſt who die ſpeedily. No remedy has been found out for this poiſon. He relates alſo, that Thraſyas had diſcovered a method of preparing from other plants a poiſon which, given in ſmall doſes of a dram, occaſioned an eaſy but certain death, without any pain, and which could be kept back for a long time without cauſing weakneſs or corruption. This Thraſyas, whoſe ſcholar Alexias carried the art ſtill farther, was a native of Mantinea, a city in Arcadia, and is celebrated by Theophraſtus on account of his abilities, and particularly his knowledge of botany; but thoſe are miſtaken who aſcribe to him the diſcovery of ſecret poiſon.

This poiſon was much uſed at Rome about two hundred years before the Chriſtian æra. As ſeveral perſons of diſtinction died the ſame year at that period, and of the like diſtemper, an enquiry being made into the cauſe, a maid ſervant gave evidence againſt ſome ladies of the firſt families, who, ſhe ſaid, prepared and diſtributed poiſon; and above an hundred and fifty of them were convicted and puniſhed. As ſo many had learned this deſtructive art, it could not be ſuppreſſed; and we find ſufficient proofs in the Roman hiſtory

that

that it was continually preſerved. Sejanus cauſed ſuch a ſecret poiſon to be adminiſtered by an eunuch to Druſus, who gradually declined afterwards as by a conſumptive diſorder, and then died.—Agrippina, being deſirous of getting rid of Claudius, but not daring to diſpatch him ſuddenly, and yet wiſhing not to leave him ſufficient time to make new regulations reſpecting the ſucceſſion to the throne, ſhe made choice of a poiſon which ſhould deprive him of his reaſon, and gradually conſume him. This ſhe cauſed to be prepared by an expert poiſoner, named Locuſta, who had been condemned to death for her infamous actions, but ſaved that ſhe might be employed as a ſtate-engine. The poiſon was given to the emperor in a diſh of muſhrooms; but as, on account of his irregular manner of living, it did not produce the deſired effect, it was aſſiſted by ſome of a ſtronger nature. This Locuſta prepared alſo the poiſon with which Nero diſpatched Britannicus, the ſon of Agrippina, whom his father Claudius wiſhed to ſucceed him on the throne. As this poiſon occaſioned only a dyſentery, and was too ſlow in its operation, the emperor compelled Locuſta, by blows, and by threatening her with death, to prepare, in his preſence, one more powerful: it was firſt tried on a kid; but, as the animal did not die till the end of five hours, ſhe boiled it a little longer, when it inſtantaneouſly killed a pig to which it was given; and this poiſon diſpatched Britannicus as ſoon as he had taſted it. For this ſervice the emperor pardoned Locuſta, rewarded her liberally, and gave her pupils whom ſhe was to inſtruct in her art, in order that it might not be loſt.

The art of preparing this poiſon muſt have been well underſtood alſo at Carthage. When M. Attilus Regulus, the Roman general, who had been taken by the Carthaginians, was ſent to Rome to propoſe to the ſenate that the Carthaginian priſoners might be reſtored in exchange for him, he prevented this negotiation, becauſe he knew that a poiſon had been adminiſtered to him by which the ſtate would ſoon be deprived of his ſervices. He returned, therefore, to Carthage, in compliance with the promiſe he had made to the enemy, who put him to death with the moſt exquiſite torture.

All theſe poiſons were prepared from plants, particularly aconite, hemlock, and poppy, or extracted from animal ſubſtances. Among thoſe made from the latter, none is more remarkable than that ſupplied by the ſea-hare, lepus marinus, with which, as Philoſtratus ſays, Titus was diſpatched by Domitian. Without here attempting to define the ſubſtances employed by the ancients to compoſe their poiſons, we ſhall only obſerve, that the *lepus marinus*, the terrible effects of which are expreſsly mentioned by Dioſcorides, Galen, Nicander, Ætius, Ælian, Pliny, and others, is that animal called, at preſent, in the Linnean Syſtem, *aplyſia depilans*, as Rondelet conjectured, and has been ſince fully proved by Bohadſch. This animal poiſon, however, ſeems to have been ſeldom uſed, as it eaſily betrays itſelf by ſome peculiar ſymptoms. It appears that it was not known to Ariſtotle, at leaſt he makes no mention of it. With the far ſtronger, and now common, mineral poiſons, the ancients were not acquainted; for their arſenic was what we call orpiment, and not that pernicious metallic calx which formed the principal ingredient of thoſe ſecret poiſons which, in latter times, were in France and Italy brought to a diabolical perfection,

No one was ever more infamous by this art than Tophana, or Toffania, a woman who reſided firſt at Palermo, and afterwards at Naples. She ſold thoſe drops, which from her acquired the name of *aqua Tophania*, *aqua della Toffana*, and which were called alſo *acquetta di Napoli*, or only *acquetta*; but ſhe diſtributed her preparation by way of charity to ſuch wives as wiſhed to have other huſbands. From four to ſix drops were ſufficient to deſtroy a man; and it was aſſerted that the doſe could be ſo proportioned as to operate in a certain time. As ſhe was watched by the government, ſhe fled to an eccleſiaſtical aſylum; and, when Keyſler was at Naples in 1730, ſhe was then ſtill living, becauſe no one could, or was willing to, take away her life, while under that protection. At that time ſhe was viſited by many ſtrangers out of curioſity.

In Labat's travels through Italy we alſo find ſome information which may ſerve, ſtill farther, to illuſtrate the hiſtory of Tophania. She diſtributed her poiſon in ſmall glaſs phials, with this inſcription, *Manna of St. Nicholas of Bari*, and ornamented with the image of the ſaint. A miraculous oil, employed by folly in the cure of many diſeaſes, drops from the tomb of that ſaint which is ſhewn at Bari in the Neapolitan territory, and on this account it is diſperſed in great abundance under the like name; it was therefore the beſt appellation which Tophania could give to her poiſon, becauſe the reputed ſanctity of it prevented the cuſtom-houſe officers from examining it too cloſely. When the viceroy was informed of this, which was about the year 1709, Tophania fled from one convent to another, but was at length ſeized and thrown into priſon. The clergy, always actuated by piety and the meek ſpirit of the goſpel, raiſed a violent outcry on account of this violation of eccleſiaſtical freedom, and endeavoured to excite the people to inſurrection in favour of this wretch! but they were ſoon appeaſed on a report being ſpread that Tophania had confeſſed ſhe had poiſoned all the ſprings in the city. Being put to the rack, ſhe acknowledged her wickedneſs; named thoſe who had protected her, and who were immediately dragged from churches and monaſteries, (to the great regret of the clergy again;) and declared that, the day before ſhe had abſconded, ſhe had ſent two boxes of her manna to Rome, where it was found in the cuſtom-houſe, but ſhe did not accuſe any one of having ordered it. She was afterwards ſtrangled; and, to mitigate the wrath of the archbiſhop for having forced ſo holy a perſon from ſo ſacred a place, her body was thrown, at night, into the area of the convent from which ſhe had been taken. Tophania, however, was not the only perſon at Naples who underſtood the making of this poiſon; for Keyſler ſays, that, at the time he was there, it was ſtill ſecretly prepared, and much employed.

In the year 1659, under the government of Pope Alexander VII. it was obſerved at Rome, that many young married women became widows, and that many huſbands died when they became diſagreeable to their wives. Several of the clergy declared alſo, that for ſome time paſt various perſons had acknowledged at confeſſion, that they had been guilty of poiſoning. As the government employed the utmoſt vigilance to diſcover theſe poiſoners, a ſociety of young wives, whoſe preſident appeared to be an old woman who pretended to foretel future events, and who had often predicted very exactly the death of many perſons, became ſuſpected. To convict her of the

the crime, a crafty woman, given out to be a perſon of conſiderable diſtinction, was ſent to her, who pretended that ſhe wiſhed to obtain her confidence, and to procure ſome of her drops for a cruel and tyrannical huſband. The whole ſociety were by this ſtratagem arreſted; and all of them, except the fortuneteller, whoſe name was Hieronyma Spara, confeſſed before they were put to the torture.—"Where now," cried ſhe, "are the Roman princes, knights, and barons, who on ſo many occaſions promiſed me their protection! Where are the ladies who aſſured me of their friendſhip! Where are my children whom I have placed in ſo diſtinguiſhed ſituations!" In order to deter others from committing the like crime, one Gratioſa, Spara's aſſiſtant, three other women, and the obſtinate Spara herſelf, who ſtill entertained hopes of aſſiſtance till the laſt moment, were hanged in the preſence of innumerable ſpectators. Some months after, ſeveral more women were executed in the ſame manner; ſome were whipt, and others were baniſhed from the country. Notwithſtanding theſe puniſhments, the effects of this inveterate wickedneſs have been from time to time remarked. Le Bret, to whom we are indebted for the above account, ſays, that Spara was a Sicilian, and acquired her knowledge from Tophania at Palermo. If that be true, the latter muſt have been early initiated in villany, and muſt have become when very young a teacher of her infamous art. Keyſler calls her a little old woman.

The art of poiſoning never excited more attention in France than about the year 1670. Mary Margaret d'Aubray, daughter of the Lieutenant-civil Dreux d'Aubray, was, in the year 1651, married to the Marquis de Brinvillier, ſon of Gobelin preſident of the chamber of accounts, who had a yearly income of thirty thouſand livres, and to whom ſhe brought a portion of two hundred thouſand. He was meſtre de camp of the regiment of Normandy, and during the courſe of his campaigns became acquainted with one Godin de Sainte Croix, a young man of a diſtinguiſhed family, who ſerved as a captain of cavalry in the regiment of Traſſy. This young officer, who was then a needy adventurer, became a conſtant viſitor of the marquis, and in a ſhort time paid his addreſſes to the marchioneſs, who loſt her huſband after ſhe had helped to diſſipate his large fortune, and was thus enabled to enjoy her amours in greater freedom. Her indecent conduct, however, gave ſo much uneaſineſs to her father, that he procured a lettre de cachet, had Sainte Croix arreſted, while in a carriage by her ſide, and thrown into the Baſtile. Sainte Croix there got acquainted with an Italian named Exili, who underſtood the art of preparing poiſon, and from whom he learned it. As they were both ſet at liberty after a year's impriſonment, Sainte Croix kept Exili with him until he became perfectly maſter of the art, in which he afterwards inſtructed the marchioneſs, in order that ſhe might employ it in bettering the circumſtances of both. When ſhe had acquired the principles of the art, ſhe aſſumed the appearance of a nun, diſtributed food to the poor, nurſed the ſick in the Hôtel-Dieu, and gave them medicines, but only for the purpoſe of trying the ſtrength of her poiſon undetected on theſe helpleſs wretches. It was ſaid in Paris, by way of ſatire, that no young phyſician, in introducing himſelf to practice, had ever ſo ſpeedily filled a church-yard as Brinvillier. By the force of money, ſhe prevailed on Sainte Croix's ſervant, called La Chauſſée, to adminiſter

poiſon

poiſon to her father, into whoſe ſervice ſhe got him introduced, and alſo to her brother, who was a counſellor of the parliament, and reſided at his father's houſe. To the former the poiſon was given ten times before he died; the ſon died ſooner; but the daughter, Mademoiſelle d'Aubray, the marchioneſs could not poiſon, becauſe, perhaps, ſhe was too much on her guard; for a ſuſpicion ſoon aroſe that the father and ſon had been poiſoned, and the bodies were opened. She would, however, have eſcaped, had not Providence brought to light the villany.

Sainte Croix, when preparing poiſon, was accuſtomed to wear a glaſs maſk; but, as this once happened to drop off by accident, he was ſuffocated, and found dead in his laboratory. Government cauſed the effects of this man, who had no family, to be examined, and a liſt of them to be made out. On ſearching them, there was found a ſmall box, to which Sainte Croix had affixed a written requeſt, that after his death it might be delivered to the Marchioneſs de Brinvillier, or, in caſe ſhe ſhould not be living, that it might be burnt. This requeſt was as follows: "I humbly beg that thoſe into whoſe hands this box may fall, will do me the favour to deliver it into the hands only of the Marchioneſs de Brinvillier, who reſides in the ſtreet Neuve Saint Paul, as every thing it contains concerns her, and belongs to her alone, and as, beſides, there is nothing in it that can be of uſe to any perſon except her; and, in caſe ſhe ſhall be dead before me, to burn it, and every thing it contains, without opening or altering any thing; and, in order that no one may plead ignorance, I ſwear by the God whom I adore, and by all that is moſt ſacred, that I advance nothing but what is true. And if my intentions, juſt and reaſonable as they are, be thwarted in this point, I charge their conſciences with it, both in this world and the next, in order that I may unload mine, proteſting that this is my laſt will. Done at Paris, this 25th of May in the afternoon, 1672.

DE SAINTE CROIX."

Nothing could be a greater inducement to have it opened than this ſingular petition; and that being done, there was found in it a great abundance of poiſons of every kind, with labels on which their effects, proved by experiments made on animals, were marked. When the marchioneſs heard of the death of her lover and inſtructor, ſhe was deſirous to have the caſket, and endeavoured to get poſſeſſion of it, by bribing the officers of juſtice; but, as ſhe failed in this, ſhe quitted the kingdom. La Chauſſée, however, continued at Paris, laid claim to the property of Sainte Croix, was ſeized and impriſoned, confeſſed more acts of villany than were ſuſpected, and was, in conſequence, broke alive on the wheel in 1673.

A very active officer of juſtice, named Deſgrais, was diſpatched in ſearch of the Marchioneſs de Brinvillier, who was found in a convent at Liege, to which ſhe had fled from England. To entice her from this privileged place, which folly had conſecrated for the protection of vice, Deſgrais aſſumed the dreſs of an abbé, found means to get acquainted with her, acted the part of a lover, and, having engaged her to go out on an excurſion of pleaſure, arreſted her. Among her effects at the convent, there was found a confeſſion, written by her own hand, which contained a complete catalogue of her crimes. She there acknowledged that ſhe had ſet fire to houſes, and that ſhe had occaſioned the death of more perſons than any one

ever ſuſpected. She remarked alſo, that ſhe had continued a virgin only till the ſeventh year of her age. Notwithſtanding all the craft which ſhe employed to eſcape, ſhe was conveyed to Paris, where ſhe at firſt denied every thing; and, when in priſon, ſhe played piquet to paſs away the time. She was, however, convicted, brought to a confeſſion of her enormities, became a convert, as her confeſſor termed it, and went with much firmneſs to the place of execution, on the 16th of July, 1676; where, when ſhe beheld the multitude of the ſpectators, ſhe exclaimed in a contemptuous manner, "You have come to ſee a fine ſpectacle!" She was beheaded, and afterwards burned; a puniſhment too mild for ſuch an offender. Martiniere ſays that ſhe was burned alive, together with all the papers reſpecting her trial. The latter is improbable, and the former certainly falſe, notwithſtanding the account given in the Encyclopédie.

The following deſcription of Brinvillier may perhaps be of uſe to our phyſiognomiſts: "In order to ſatisfy the curioſity of thoſe who may be deſirous of knowing if ſuch a celebrated criminal partook of the beauties of her ſex, I ſhall obſerve, that nature had not been ſparing of them to the marchioneſs; her features were exceedingly regular, and the form of her face, which was round, was very graceful. This beautiful outſide concealed a heart extremely black. Nothing proves more that *metopoſcopy*, or the ſcience of phyſiognomy, is falſe; for this lady had that ſerene and tranquil air which announces virtue."

Among a number of perſons ſuſpected of being concerned in this affair, was a German apothecary, named Glaſer, who, on account of his knowledge in chemiſtry, was intimate with Exili and Sainte Croix. From him they had both procured the materials which they uſed, and he was ſome years confined in the Baſtile; but, the charge againſt him being more minutely inveſtigated, he was declared innocent, and ſet at liberty. He was the author of a treatiſe of chemiſtry, printed at Paris in 1667, and reprinted afterwards at Bruſſels in 1676, and at Lyons in 1679.

By the execution of this French Medea, the practice of poiſoning was not ſuppreſſed; many perſons died from time to time with very ſuſpicious circumſtances; and the archbiſhop was informed, from different pariſhes, that this crime was ſtill confeſſed, and that traces of it were remarked both in high and in low families. For watching, ſearching after, and puniſhing, poiſoners, a particular court, called the *Chambre de poiſon*, or *Chambre ardente*, was at length eſtabliſhed in 1679. This court, beſides other perſons, detected two women, named La Vigoreux and La Voiſin, who carried on a great traffic in poiſons. The latter was a midwife. Both of them pretended to foretel future events, to call up ghoſts, and to teach the art of finding hidden treaſures, and of recovering loſt or ſtolen goods. They alſo diſtributed philtres and ſold ſecret poiſon to ſuch perſons as they knew they could depend upon, and who wiſhed to employ them either to get rid of bad huſbands, or recover loſt lovers. Female curioſity induced ſeveral ladies of the firſt rank, and even belonging to the court, to viſit theſe women, particularly La Voiſin, and who, without thinking of poiſon, only wiſhed to know how ſoon a huſband, lover, the king, or his miſtreſs, would die. In the poſſeſſion of La Voiſin was found a liſt of all thoſe who had given themſelves up to her impoſition, who were arreſted and carried before the

the above-mentioned court, which, without following the uſual courſe of juſtice, detected ſecret crimes by means of ſpies, tried them privately, and began to imitate the proceedings of the holy inquiſition. In this liſt were found the diſtinguiſhed names of the Counteſs of Soiſſons, her ſiſter the Ducheſs de Bouillon, and Marſhal de Luxembourg. The firſt fled to Flanders to avoid the ſeverity and diſgrace of impriſonment; the ſecond ſaved herſelf by the help of her friends; and the laſt, after he had been ſome months in the Baſtile, and had undergone a ſtrict examination, by which he almoſt loſt his reputation, was ſet at liberty as innocent. Thus did the cruel Louvois, the war miniſter, and the Marchioneſs de Monteſpan, ruin thoſe who oppoſed their meaſures. La Vigoreux and La Voiſin were burnt alive, on the 22d of February 1680, after their hands had been bored through with a red-hot iron, and cut off. Several perſons of ordinary rank were puniſhed by the common hangman; thoſe of higher rank, after they had been declared by this tribunal not guilty, were ſet at liberty; and in 1680 an end was put to the *Chambre ardente*, which in reality was a political inquiſition.

It is certain that, notwithſtanding ſuch puniſhments, like crimes have given occaſion to unjuſt ſucceſſion both in Italy and in France, and that attempts have been made for the ſame purpoſe even in the northern kingdoms. It is known, that in Denmark Count Conſtiz de Ulfeld was guilty, though it was not proved, of having intended to give the king a poiſon, which ſhould gradually deſtroy him like a lethargy. Charles XI. alſo, king of Sweden, died by the effects of ſuch a poiſon. Having ruined ſeveral noble families by ſeizing on their property, and having after that made a journey to Torneo, he fell into a conſumptive diſorder, which no medicine could cure. One day he aſked his phyſician, in a very earneſt manner, what was the cauſe of his illneſs? The phyſician replied, "Your majeſty has been loaded with too many maledictions." "Yes," returned the king, "I wiſh to God that the reduction of the nobility's eſtates had not taken place, and that I had never undertaken a journey to Torneo!" After his death his inteſtines were found to be full of ſmall ulcers.

The oftener poiſoning in this manner happens, the more it is to be wiſhed that preventatives and antidotes were found out, and that the ſymptoms were aſcertained; but this is hardly poſſible as long as it is not known of what the poiſon properly conſiſts. Governments, however, have wiſely endeavoured to conceal the receipts, by ſuppreſſing the criminal procedures. Pope Alexander VII. cauſed them to be ſhut up in the caſtle of St. Angelo; in France, it is ſaid, they were burned together with the criminals; in Naples only, the ſame precaution was not taken. We do not know that obſervations on the bodies of perſons deſtroyed by ſlow poiſon have been ever publiſhed; for what Pitaval ſays on that ſubject is not ſufficient. People talk of powders and pills, but the greater part of this kind of poiſon appears to be a clear inſipid water, and that prepared by Toffania never once betrayed itſelf by any particular effects on the body. The ſale of aqua fortis was a long time forbidden at Rome, becauſe it was conſidered as the principal ingredient; but that is very improbable. At Paris it was once believed that ſucceſſion-powder conſiſted of diamond-duſt pounded exceedingly fine. Without aſſenting to this idea, one may contradict Voltaire, who conceives that diamond-

diamond-duſt is not more prejudicial than powder of coral. It may be rather compared to that fine ſand which is rubbed off from our mill-ſtones, and which we ſhould conſider and guard againſt, as a ſecret poiſon, were we not highly negligent and careleſs of our health in the uſe of food. In the caſket of Sainte Croix were found ſublimate, opium, regulus of antimony, vitriol; and a large quantity of poiſon ready prepared, the principal ingredients of which the phyſicians were not able to diſtinguiſh. Many have affirmed, that ſugar of lead was the chief ingredient; but the conſequences of the poiſon did not ſeem to indicate the uſe of that metal. For ſome years paſt a harmleſs plant, which is only ſomewhat bitter and aſtringent, the *cymbalaria*, that grows on old walls, has been loaded with the opprobrium of producing this ſlow poiſon, while at the ſame time it has been celebrated by others on account of its medicinal properties; but it is, perhaps, not powerful enough to do either miſchief or good; and, it is probable that it has been added to poiſons either through ignorance, or to conceal other ingredients; for the Emperor Charles VI. who was king of the Two Sicilies at the time when Toffania was arreſted, told his phyſician Garelli, who communicated the ſame in a letter to the celebrated Hoffman, in 1718 or 1719, that the poiſon of that Italian Circe was compoſed of an arſenical calx, diſſolved in *aqua cymbalariæ*, and which I ſuppoſe was rendered ſtronger and more difficult to be detected by a ſalt that may be readily gueſſed. It is dreadful to think, that this ſecret poiſon is adminiſtered as a febrifuge by ignorant or unprincipled phyſicians, quacks, and old women. It drives off obſtinate fevers, it is true; but it is equally certain that it haſtens death: it is, therefore a cure, which is far worſe than the diſeaſe, and againſt which governments and phyſicians cannot exclaim too ſeverely. Let us here be permitted to recommend to the latter the ideas of Mr. Mohſen on this ſubject, and to chemiſts the means Mr. Bell employed to analyſe theſe ſtygian drops. It was remarked at Rome, by accident, that lemon juice and the acid of lemons are, in ſome meaſure, counter poiſons; and a phyſician named Paul Branchaletti, reſpecting whom we can find no information, wrote a book expreſsly on this antidote to theſe drops, according to the account of Keyſler, who however adds, "Every thing hitherto found out, ſuppoſes that one has taken the drops only for a ſhort time, or that one has had an opportunity to be upon one's guard when ſuſpicious circumſtances occurred, and to diſcover the threatened danger."

It ſeems to be almoſt certain that the poiſons prepared by Toffania and Brinvillier were arſenical mixtures, or, as Dr. Hahneman rightly conjectures, arſenical neutral ſalts. Loſs of appetite, faintneſs, gnawing pains in the ſtomach, loſs of ſtrength without any viſible cauſe, a continual indiſpoſition, followed by a waſting of the lungs, a ſlow fever, &c. are all ſymptoms which ſeem to announce that dangerous ſemi-metal. The opinion, however, that it was compoſed of opium and cantharides has, in latter times, received ſo many confirmations, that one is almoſt induced to believe that there are more kinds than one of this ſtygian water. The information given by the Abbé Gagliani ſeems to carry too much weight with it to be denied:—On the 20th of December, 1765, died the dauphin, father of the preſent king, and in 1767 died the dauphin. It was a public report that they were both diſpatched by ſecret poiſon: and the

gradual decline of their health, the other circumſtances which accompanied their illneſs, and the cabals which then exiſted at court, make this at leaſt not improbable. Many private anecdotes reſpecting theſe events may be found in a book entitled *L'Eſpion devaliſé*, Lond. 1782. In page 61 it is ſaid, that, on account of the ſuſpicions then entertained, it was wiſhed that information might be procured reſpecting ſecret poiſon, and the methods of preparing it; and, that the Abbé Gagliani, well known as a writer, has given the following:—"It is certain that in Europe the preparation of theſe drugs renders them pernicious and mortal. For example, at Naples the mixture of opium and cantharides, in known doſes, is a ſlow poiſon, the ſureſt of all, and the more infallible as one cannot miſtruſt it. At firſt it is given in ſmall doſes that its effects may be inſenſible. In Italy we call it *aqua di Tufonia*, Tufania water. No one can avoid its attacks, becauſe the liquor obtained from that compoſition is as limpid as rock water, and without taſte. Its effects are ſlow and almoſt imperceptible: a few drops of it only are poured into tea, chocolate, or ſoup, &c. There is not a lady at Naples who has not ſome of it lying careleſsly on her toilette with her ſmelling-bottles. She alone knows the phial, and can diſtinguiſh it. Even the waiting woman, who is her confidante, is not in the ſecret, and takes this phial for diſtilled water, or water obtained by precipitation, which is the pureſt, and which is uſed to moderate perfumes when they are too ſtrong.

"The effects of this poiſon are very ſimple. A general indiſpoſition is at firſt felt in the whole frame. The phyſician examines you, and perceiving no ſymptoms of diſeaſe, either external or internal, no obſtructions, no collection of humours, no inflammations, orders detergents, regimen, and evacuation. The doſe of poiſon is then doubled, and the ſame indiſpoſition continues without being more characteriſed.—The phyſician, who can ſee in this nothing extraordinary, aſcribes the ſtate of the patient to viſcous and peccant humours, which have not been ſufficiently carried off by the firſt evacuation. He orders a ſecond—a third doſe—a third evacuation—a fourth doſe. The phyſician then ſees that the diſeaſe has eſcaped him, that he has miſtaken it, and that the cauſe of it cannot be diſcovered but by changing the regimen. He orders the waters, &c. In a word, the noble parts loſe their tone, become relaxed and affected, and the lungs particularly, as the moſt delicate of all, and one of thoſe moſt employed in the functions of the animal œconomy. The firſt illneſs then carries you off; becauſe the critical accumulation ſettles always on the weak part, and conſequently on the lobes of the lungs; the pus there fixes itſelf, and the diſeaſe becomes incurable. By this method they follow one as long as they chooſe for months, and for years. Robuſt conſtitutions reſiſt a long time. In ſhort, it is not the liquor alone that kills, it is rather the different remedies, which alter and then deſtroy the temperament, exhauſt the ſtrength, extenuate and render one incapable of ſupporting the firſt indiſpoſition that comes."

BUONAPARTE's EXPEDITION. Continued from vol. iv. p. 293.

BUONAPARTE is not dead, as reported. The following are the circumſtances of the inſurrection in which he was ſuppoſed to have periſhed.

Buonaparte

Buonaparte wiſhed to impoſe a tax of ten piaſtres on every houſe in Cairo, to compel the inhabitants to wear the national cockade, and to ornament the doors of their houſes with it. He had for theſe purpoſes convened a council, and had ſent thither one of his principal generals with a ſuite of ſixty perſons. While this general attempted to convince the people of the propriety of theſe meaſures, a common man, a native of Barbary, ſhot him with a piſtol, and all his retinue were maſſacred. The populace then maſſacred all the French in the houſes and ſtreets, and ſet fire to the buildings in which they took refuge and defended themſelves. About five hundred Frenchmen, who were aſſembled at Azab-Kerbeſſo, were attacked and cut to pieces.

At the ſame time, Aga Muſtapha, Kinja of Abubekir, the ci-devant Pacha of Cairo, collected all the Turks, and put himſelf at their head, with all the ſheiks and the hulems. The caſtle was forced, two other generals under Buonaparte were killed in the engagement, the garriſon was put to the ſword, and all the artillery and ammunition fell into the hands of the Turks. Buonaparte, who had retired to Boulack, attempted by his uſual artifices to repair this diſaſter. He propoſed conciliatory terms, and ſubſcribed to the offences which had been committed; but the only anſwer made to this conduct by the Muſſulmen was a diſcharge of artillery from the caſtle.

The following diſpatch relative to the inſurrection is copied from the Redacteur.

"Towards the middle of Vendemiaire (beginning of October) meaſures of ſecurity induced the general in chief to arm the Europeans formerly eſtabliſhed at Cairo, as well as all the French who compoſed the military adminiſtrations, and others who followed the army.—Informed that a ſedition was ſecretly planned, the general tried to prevent its evil effects, but his endeavours were unſucceſsful.

On the 30th of Vendemiaire (Oct. 21), General Dupuy, commandant of the garriſon of Cairo, being informed that a mob was forming at the grand moſque, mounted his horſe, and went at the head of the 12th dragoons to diſperſe it. The Turks in the city ſaid, that the diſcontent occaſioned by the impoſts was the ſole cauſe of the tumult. General Dupuy arrived at the grand moſque, and tried to diſperſe the mob, which increaſed every moment; but he found them refractory, and ſoon experienced their rage. He endeavoured to repel them by force, but he and his eſcort were aſſailed by a great multitude, and he was mortally wounded in two places. Some dragoons alſo fell, and the others conducted the general to his quarters, where he died ſome hours after.

This was the ſignal of the inſurrection, and from that moment the Turks proceeded in crowds to the grand moſque, where they fortified themſelves, armed with lances, ſharp-pointed ſtakes, and ſome fire-arms. Their plot was well laid. They did not confine themſelves to aſſembling in a great number at the grand moſque; but each private moſque formed a fortreſs for them, from which they directed their attack or defence.

The *generale* was ſoon beaten, and the troops aſſembled. The news of the death of Dupuy excited in the ſoldiers an eager deſire of vengence. The general in chief ordered a battalion to march towards the grand moſque, where the Turks were aſſembled to the number of eight or ten thouſand. They were ſummoned to ſur-

render, which they abſolutely refuſed. The citadel then fired upon the town, and chiefly upon this moſque, into which ſome bombs were thrown. Several battalions were diſperſed through the city, and directed againſt the other moſques, where mobs were collected; they were attacked at the ſame time, and all equally repulſed. Obliged to ſhut themſelves up in their moſques, they ſaw, but it was too late, their imprudence: the French forced the gates, and made a terrible carnage among them. But, though defeated, they were not beaten, the number of the dead was replaced by freſh inſurgents. This day was bloody, but the following was more ſo. Every one found armed with a cudgel or a ſtake was put to death. The Turks, on their part, had already aſſaſſinated ſeveral Frenchmen who were found alone in the ſtreets. The hopes of pillage animated them, and they proceeded to attack the houſes inhabited by the French. General Caffarelli's houſe was entirely plundered, and his guard and agents murdered.

On the 2d of Brumaire (Oct. 23) there were ſtill ſome traces of the tranſactions of the preceding day: but towards the evening all was calm, and tranquillity began to be reſtored. The loſs of the inſurgents is calculated at five or ſix thouſand, and that of the French at about one hundred men killed, and ſeveral wounded, chiefly by large ſtones which the inhabitants threw from the tops of their houſes.

In this affair the Greeks, who reſide at Cairo, gave the greateſt proofs of their courage and attachment to the French: one of them, named Barthelemy, particularly diſtinguiſhed himſelf, and has received marks of favour from the general in chief. They did not confine themſelves to defending our cauſe; but, pointed out thoſe who had taken up arms, and eſcaped by flight. They made a great number of priſoners; and none who were found to be criminal eſcaped death.

Some groups of the inſurgents fled armed from the town, hoping to eſcape by a ſpeedy flight; but the Arabs of the deſert, who are equally the enemies of all who are foreign to their tribe, pillaged them, and General Danourt purſued them cloſely with the cavalry.

There are juſt grounds to preſume that the chiefs of the religion were in concert with the mamelucks, the inſtigators of this revolt: of this there are ſome unequivocal proofs. In conſequence of the inquiries which have been made, ſeveral mamelucks have been found concealed in the houſes of Turks; others were dreſſed as women. All who were diſcovered in conſequence of the united vigilance of the French and Greeks have been puniſhed, in virtue of an arrete of the commander in chief anterior to that time."

Here it is curious to remark, that, through the whole of the above diſpatch, the name of Buonaparte is not mentioned: it is always "general in chief."

Murat Bey expreſſes himſelf nearly in the following terms with reſpect to the action in which he was engaged with Gen. Deſſaix:

"I was entrenched near the bridge of Pharon, ſome leagues from Cairo, and my project was to ſtraiten the French more and more, and to intercept their proviſions. But being informed by my ſcouts that 12,000 infidels had embarked, and drew near with four veſſels laden with arms and ammunition, I advanced to meet them with my cavalry by reaſcending the Nile. I fell in with the enemy and fought them during the whole day; the next day we renewed the fight, and continued it for ſix ſucceſſive days. The infidels at length ſucceeded in

in landing with their artillery, and formed three entrenched camps. Our cavalry, confiding in the aſſiſtance of the prophet, attacked them again, and one thouſand of them were made to bite the duſt. I proceeded afterwards to the defiles of Tajun Raſt, with a view of collecting my infantry, and getting the wounded taken care of. The infidels are very much weakened and diſperſed. It cannot be doubted that they muſt, with the protection of the Almighty, be ſhortly annihilated."

The advices from India by the laſt ſhips ſtate, that Tippoo Saib was placing himſelf in a warlike attitude, under the expectation no doubt that Buonaparte's army would have made ſome farther progreſs than it has been able to do. There can be no queſtion that a combination exiſts between the two powers; but, as no apprehenſions of danger are now entertained from the army of Egypt, it is probable that Tippoo's preparations will ceaſe, as ſoon as he learns the difficulties which the French have to encounter for their own preſervation. The Engliſh government has, however, taken every prudent precaution to augment its military force in India; and accordingly a detachment of two thouſand men from the Cape embarked in the beginning of November for the different preſidencies, under convoy of the Sceptre and Raiſonable men of war.

Commodore Blanket, with his ſquadron, paſſed the Cape of Good Hope early in November, but without touching at it. His deſtination is to take poſſeſſion of the iſland of Socotora, which commands the entrance of the Red Sea. When the commodore ſailed, there were greater apprehenſions than are now entertained reſpecting the ſucceſs of the French expedition to Egypt.

We have now before us the ſecond part of the valuable correſpondence of the "Army of the Eaſt," intercepted, like the firſt, by the joint vigilance of the Turkiſh and Engliſh governments.

The uncontroulable dominion which we poſſeſs in the Mediterranean, and the annihilation of the French flag in that ſea, have rendered what was before a matter of extreme difficulty, almoſt an impoſſibility. All the intercepted letters are full of complaints of the want of intelligence: none is received, and none is ſent, unleſs to be taken before their eyes by our cruizers. Nay, ſo completely are the French in Egypt ſecluded from the world, that even in the laſt letters we find them altogether ignorant of the three events which moſt concern them, the hoſtility of the Turks, the revolt of the Malteſe, and the renewal of the war in Italy!

Buonaparte himſelf ("the undiſturbed poſſeſſor of Egypt," as he is ſtyled) is ſo ſenſible of the innumerable obſtacles which oppoſe his communicating with France, that he has long ſince ceaſed to attempt it in the uſual way. From the period of his defeat by Ibrahim Bey, he has ceaſed writing altogether, and has had recourſe to the preſs. His official papers of every kind are printed in great numbers, and truſted to itinerant Syrians, Jews, &c. who frequent the Egyptian marts, and who are paid for conveying them ſecretly to Scanderoon, Berut, or St. John d'Acre, in hopes of finding ſome neutral veſſel there that will undertake to forward them to France. Several copies of the general's laſt diſpatches, were diſcovered plaited into the clothes of a Jew at Acre. Others have found their way to Conſtantinople, and from thence to France. Can there be a ſtronger

proof

proof of the dreadful ſituation to which Buonaparte is reduced, than this expedient—favouring ſo ſtrongly of deſpair?

We ſhall endeavour to give ſome extracts from this intereſting work, as occaſion may offer.

It does not appear, that, ſince Buonaparte aſſembled a divan at Cairo in the month of October laſt, there is any certain knowledge of the tranſactions of the French army. A general inſurrection ſeems to have followed that meeting; but its immediate cauſes and conſequences are yet to be developed. Not a ſingle official letter has reached Europe ſince it took place, and the few private ones which have come to hand are more calculated to provoke than to ſatisfy the public curioſity. It only appears that hundreds, perhaps thouſands, fell on each ſide; but whether the French ultimately prevailed, and have to look to a ſecond inſurrection for their final extermination, or whether they were cut off in that of which we ſpeak, is a matter of which this part of the world remains at preſent in perfect ignorance. It is probable that the army of the eaſt is by this time a ſhadow of a ſhade; and that, among the few which may yet reach France after the re-capture of Alexandria (an event that muſt ſpeedily take place), not one will be found who ſhared in the "immortal battle of the Pyramids," or the "triumphant expedition to the confines of Syria!"

It appears that, with the exception of ſuch packets as were on-board the Généreux, and which might reach Paris by the way of Ancona, the directory have not received a ſingle original diſpatch, nor the people of France a ſingle original letter, from the army of the eaſt, ſince the capture of Malta. The firſt diſpatches of Buonaparte and Berthier were taken by the Turks, and ſent to Conſtantinople. There the Porte permitted them to be copied by the different ambaſſadors; and thoſe who are acquainted with the politics of one of the northern courts, who know that the French have an active agent in every one of its miniſters, will not be long at a loſs for the manner in which they reached the directory. Private letters (that is to ſay, copies of them) have found their way to France through the ſame channel; for moſt of the originals are in this country.

At the time of the arrival of Buonaparte in Egypt, the Paris papers were filled with accounts of the vaſt treaſures found in that country. We had then only the general's public declarations to guide our opinion; we ſhall now ſee that his public and private profeſſions differ very materially.

General Buonaparte to Citizen Joſeph Buonaparte, Deputy to the Council of Five Hundred, at Paris, dated Cairo, (7 Thermidor,) July 28th.

You will ſee in the public papers the relation of the battles, and of the conqueſt of Egypt, which has been ſufficiently diſputed to add another leaf to the military glory of this army. Egypt is the richeſt country in the world, in wheat, rice, pulſe, and cattle. Barbariſm is at its height. There is no money in the country; no, not even to pay the troops. I think of being in France in two months. [It is worthy of obſervation, that this ſentence was written the very day after Buonaparte had declared in his official letters, to all Europe, that on the bodies of the 2000 mamelucs, who fell in the "battle of the pyramids," his ſoldiers had found 20,000,000 livres

livres in ſpecie. But this is not all,—it appears from the next line that Egypt was expected to furniſh money for the troops. This is a curious circumſtance, and affords matter for deep reflection. Buonaparte left France, perhaps, without a ſingle day's pay for his army. The plunder of Malta, except a few ingots which were diſtributed amongſt the merchants of Alexandria, with a view of being ſpeedily reclaimed, was on board the l'Orient, and with the expected treaſures of Cairo, and the grand caravan, was, undoubtedly deſtined to ſwell the private fortunes of the general and his confidants; while the troops were to be left as in Swabia, and Franconia, and Brabant, and Holland, and Italy, and Switzerland, to ſupport themſelves by wreſting from the inhabitants, who are thus, in mockery, "made free, and proſperous, and happy," the miſerable reliques of the rapacity of the officers, and the agents of government.]

Take your meaſures ſo that I may have a country ſeat at my arrival, either in the neighbourhood of Paris, or in Burgundy: I reckon on paſſing the winter there.

The following are ſome of the moſt intereſting articles of intelligence which have been received ſince our laſt report on this ſubject.

CONSTANTINOPLE, *March* 3. The government received ſome days ago direct information from the Pacha of Acri, that General Buonaparte, in perſon, having paſſed the Iſthmus of Suez, had advanced as far as Gaza, a ſmall town ſituated on the ſea-ſhore, ſix days march from Cairo, and had taken poſſeſſion of it without any reſiſtance. It is alſo ſaid, that Sir Sydney Smith has proceeded to bombard the town of Gaza, and to ſupport the operations of the army of Syria.—A diviſion of the Ruſſian and Turkiſh troops which had been deſtined againſt Paſwan Oglou, had proceeded to join the Pacha of Acre, who aſſures the Porte, that Buonaparte, notwithſtanding the ſtrong fortifications which he has conſtructed for his defence, would ſhortly be in his power.

MARCH 9. On the 28th of February, 1,500 boſtangis were embarked on-board of two Turkiſh frigates and ſeveral tranſports, deſtined to join the diviſion of Egypt. Theſe troops form part of a body of infantry trained to the practice of European tactics. Buonaparte, whom Ghezzar Pacha was preparing to attack with a numerous army in Egypt, has anticipated the attack by ſending a part of his troops, under General Kleber, into Syria, who has taken the town of Gaza. The news has been ſent to the Porte by Ghezzar himſelf, who was ſtill at Acre, the ſeat of his government. The Engliſh began to bombard Alexandria on the 3d of February, and, though the fire was terrible, it did not ſucceed in making the French evacuate the place.

MARCH 18. Ghezar Pacha, having received information of the capture of Gaza by the French, ordered his army to move in a direction by which the French have been turned, and their communication with Cairo cut off. Murad Bey is ſtrongly intrenched in Upper Egypt, and waits the arrival of Ghezar Pacha. Two veſſels more have ſailed from this port laden with military ſtores for the Engliſh ſquadron before Alexandria, which continues to bombard that town.

APRIL 3. Two couriers diſpatched by Ghezar Pacha from Acri, have brought very diſagreeable intelligence of the army deſtined to oppoſe

oppoſe Buonaparte. The French have not only taken Gaza, in *ci-devant* Judea, but alſo Giatta, formerly known by the name of Joppa, which is only nine leagues from Jeruſalem, and 160 Italian miles from St. John of Acre. They are indebted for their advantages to their alliance with the natives of Mount Libanon, who have been at all times enemies of the Turks. Ghezar alſo ſtates, that he is thus placed between two dangerous enemies, whom he cannot keep off, and that he even apprehends they will attack him in the ſeat of government. He had ſent a body of 30,000 men againſt the French, but they were completely routed, and he has only been joined by 1000 European troops, although 10,000 were to have been ſent to his aſſiſtance. He renews his demand for immediate reinforcements, as he fears his caſtle may be beſieged. It is apprehended at Conſtantinople, that Jeruſalem, Damas, and all Syria, have fallen into the hands of the French.

APRIL 16. We have at length received official news from Egypt, which ſtate, that the French, under the order of Buonaparte, having gained a battle, were about to advance to Acre, in order to make themſelves maſters of Paleſtine, when Ghezar Pacha, rendered furious by the loſs of the firſt battle, inſpired his troops with ſuch courage and confidence, as to make them renew the engagement with intrepidity. The iſſue of it proved unfortunate to the French, who were forced to fall back on Egypt, after leaving ſeveral thouſand men on the field of battle. Ghezar Pacha eſtimates the total loſs of the enemy at more than 6000 men, and has aſſured the Grand Signior that he will not ſheath his ſword until he ſhall have cut off the head of the laſt Frenchman in that part of the Turkiſh territory.

Buonaparte has alſo experienced another check in Egypt. After having collected ſeventeen veſſels, and put on-board of them artillery and warlike ſtores, to be conveyed by one of the mouths of the Nile to the coaſt of Paleſtine, the convoy was attacked by the Engliſh, five veſſels ſunk, ſeven captured, and the others were chaced to the iſlands of the Archpelago.

We farther learn, that Captains Smithand Trowbridge have made a deſcent upon the coaſt of Egypt with Ruſſian and Turkiſh troops, and have intercepted Buonaparte's communication with Syria, Alexandria, and Cairo. It is reported that the French directory, deſirous to give the command of its troops once more to Buonaparte, is trying every poſſible means to facilitate his return to France.

PARIS, *April* 7. Citizen Guery, captain of the 22d chaſſeurs, who was taken priſoner by the Ruſſian ſquadron on his paſſage from Egypt, has brought the moſt ſatisfactory intelligence to government reſpecting our army. It has been re-inforced by 80,000 recruits, principally Greeks and Jews, and forts and entrenchments are formed in the chief points on the frontiers and coaſt. Citizen Guery has alſo communicated to us the following letter:

Lanus, General of Brigade, to Citizen Guery, Commander of the Garriſon of Menouſe, in Egypt, dated Mit Kamar, March 1.

We defeated the Arabs the day before yeſterday, and took all their cattle and baggage. Upwards of one hundred and fifty of them were killed. I expect to be at Menouſe in three or four days.

LANUS.

Buonaparte, Member of the National Inſtitute, and General in Chief, to the Executive Directory.

CITIZENS DIRECTORS, We have learned by the way of Suez, that ſix French frigates, which were cruizing at the mouth of the Red Sea, had taken Engliſh prizes to the amount of more than twenty millions in value. The Ramadan, which commenced yeſterday, has been celebrated upon my part with the greateſt pomp. I have diſcharged the ſame functions which the pacha formerly had to perform. General Deſſaix is more than eighty myriameters from Cairo, and very near the Cataracts. He is ſearching for the ruins of Thebes. I am every moment in expectation of official details of a battle which he has had with the mamelukes, and in which Murat Bey has been killed; and five or ſix beys have been taken priſoners. Adjutant-general Boyer has diſcovered in the deſert, in the vicinity of Faium, ruins never before ſeen by any European. Gen. Andreoſi and Citizen Berthollet are on their return from an excurſion to the Lakes of Natron and the Convents of the Copts. They have made ſeveral extremely intereſting diſcoveries; and among others ſome excellent natron, (native alkali,) which the ignorance of the miners prevented them from before obſerving. This branch of the commerce of Egypt will thence become ſtill more important. BUONAPARTE.

The following is a copy of Buonaparte's curious Proclamation to the Egyptians, dated Cairo, Feb. 20, 1799.—Wicked men had ſucceeded in leading part of you aſtray; and they have periſhed. God has directed me to be merciful to the people. I have been irritated againſt you on account of your inſurrection; I have deprived you for two months of your divan, but I reſtore it to you this day: your good conduct has effaced the ſtains of your rebellion. Scheriffs, ulemas, preachers at the moſques, make it known to the people, that thoſe who may declare themſelves my enemies ſhall have no refuge either in this world or in the next! Can there exiſt any man ſo blind as not to ſee that deſtiny directs all my operations? Can any one be ſo incredulous as to make it a queſtion of doubt that every thing in this vaſt univerſe is ſubmiſſive to the empire of Fate?

Inform the people, that ſince the creation of the world it has been written, that, after having deſtroyed the enemies of Iſmaeliſm, and laid their croſſes proſtrate, I ſhould come from the extremity of the weſt to fulfil the taſk which has been impoſed upon me. Shew to the people's conviction, that in the holy book of the Koran, and in more than twenty paſſages of it, what happens has been foreſeen, and what will happen has been equally unfolded. Let thoſe, then, who are prevented only by the fear of our arms from curſing us, change their ſentiments; for, in addreſſing prayers to Heaven againſt us, they ſolicit their own condemnation. Let the true believers pray for the ſucceſs of our arms. I might demand of each of you the cauſes of the ſecret ſentiments of your hearts; for I know all, even what you have not revealed to any one. But the day will come, in which all the world ſhall clearly ſee, that I am conducted by a ſuperior order of beings, and that every human effort cannot prevail againſt me. Happy thoſe who ſhall ſincerely be the firſt to range themſelves on my ſide. BUONAPARTE.

Letter from Admiral Nelson to the Governor of Bombay, dated Vanguard, Mouth of the Nile, Auguſt 9, 1798.

SIR, Although I hope the conſuls who are, or ought to be, reſident in Egypt, have ſent you an expreſs of the ſituation of affairs here, yet, as I know Mr. Baldwin has ſome months left Alexandria, it is poſſible you may not be regularly informed; I ſhall therefore relate to you briefly that a French army of 40,000 men in three hundred tranſports, with thirteen ſail of the line, eleven frigates, bomb-veſſels, gun-boats, &c. &c. arrived at Alexandria on the 1ſt of July; on the 7th they left it for Cairo, where they arrived on the 22d. During their march they had ſome actions with the mamelukes, which the French call great victories. As I have Buonaparte's diſpatches now before me, which I took yeſterday, I ſpeak poſitively: he ſays, "I am now going to ſend off to take Suez and Damietta." He does not ſpeak favourably of either country or people; but there is ſuch bombaſt in his letters that it is difficult to get at the truth, but you may be ſure he is only maſter of what his army covers. From all the enquiries which I have been able to make, I cannot learn that any French veſſels are at Suez to carry any part of his army to India. Bombay (if he can get there) I know is the firſt object; but I truſt the Almighty God in Egypt will overthrow theſe peſts of the human race. It has been in my power to prevent 12,000 men from leaving Genoa, and alſo to take eleven ſail of the line and two frigates; two ſail of the line and two frigates have eſcaped me. This glorious battle was fought at the mouth of the Nile, at anchor; it began at ſun-ſet, and was not finiſhed at three the next morning; it has been ſevere, but God favoured our endeavours with a great victory. I am now at anchor between Alexandria and Roſetta to prevent their communication by water, and nothing under a regiment can paſs by land. But I ſhould have informed you, that the French have four thouſand men poſted at Roſetta to keep open the mouth of the Nile. Alexandria, both town and ſhipping, are ſo diſtreſſed for proviſions, that they can only get them from the Nile by water; therefore I cannot gueſs the good which may attend my holding our preſent poſition, for Buonaparte writes his diſtreſs for ſtores, artillery, and things for their hoſpital, &c. All uſeful communication is at an end between Alexandria and Cairo: you may be ſure I ſhall remain here as long as poſſible. Buonaparte had never yet to contend with an Engliſh officer, and I ſhall endeavour to make him reſpect us.

This is all I have to communicate; I am confident every precaution will be taken to prevent in future any veſſels going to Suez which may be able to carry troops to India. If my letter is not ſo correct as might be expected, I truſt your excuſe, when I tell you my brain is ſo ſhaken with the wound in my head that I am ſenſible I am not always as clear as could be wiſhed; but whilſt a ray of reaſon remains, my heart and hand ſhall ever be exerted for the benefit of our king and country. HORATIO NELSON.

Some late accounts ſtate, that the whole continent of Africa, from Morocco to Egypt, has at length taken up arms againſt the French, at the inſtance of the Grand Signor. The ſtates of Barbary and the Emperor of Morocco are not ſatisfied with fitting out corſairs, but have ſent large bodies of troops to attack Buonaparte in Egypt, of whom the French papers ſcarcely ſpeak. The two courts of the Porte

Porte and Ruſſia continue their preparations of war with a bold perſeverance which cannot be too much admired.

A Paris paper contains the following paragraph :—Capt. Marenjo, who brought the news to Genoa of the maſſacre of the French in Sicily, ſtates, that when he left Egypt, the French army had abundance of proviſions, and that Buonaparte had embarked four hundred ſailors on an expedition to the Red Sea.

The laſt accounts were received from Commodore Troubridge, off the coaſt of Egypt, which ſtate, that an epidemic diſtemper was raging in the French army, which carried off numbers every day.

The directory ſeems deſirous to provide at leaſt for the amuſement of Buonaparte in Egypt, ſince paſſports to that country have been granted to the French actors and actreſſes who may with to exhibit there. Would it not have been more apropos to have got their paſſports ſigned by Lord Nelſon?

Among other poſſible conſequences of Buonaparte's expedition to Egypt, and the ſucceſs which has attended his arms, there is one event which ſuggeſts itſelf with peculiar force to the mind, when conſidered in reference to the Jews. This diſperſed but numerous people, it is well known, have never loſt ſight for a moment of the predictions which announce their reſtoration as a civil community, their national independence, and return to the Holy Land. There can be no doubt, therefore, but the capture of Jeruſalem and Paleſtine, in general, by Buonaparte, muſt lead them to look forward to that event with the moſt ſanguine hopes. When Buonaparte left France, this was one of the profeſſed objects of his expedition; and, as there are numbers of Jews on all the ſhores of the Mediterranean, we ſhall be ſurpriſed if he does not attempt to carry this object into effect. This is an age of wonders! The pope overthrown, Turks and Chriſtians united in a war of religion, and the Jews reſtored!

Sir Joſeph Banks is ſtated, to have received letters from Horneman, the German naturaliſt, who went to Grand Cairo. Buonaparte, Monge, and Berthollet, had received him very kindly. Horneman ſet off by the caravan of Fezzan, on the 12th of September, with camels, horſes, and other merchandize. He paſſed for a merchant, but not one of great property, for fear of exciting the avarice of his guides. He met by accident with another German, his countryman, who had been long in Egypt, and who had changed his religion to that of Mahomet, who had been three times in a pilgrimage to Mecca, and who ſpoke the Turkiſh and Arabic languages with great fluency. This man was on the point of returning to Europe, but was prevailed on by Horneman to lay aſide his intention, and to accompany him into the interior. Horneman purpoſes to go to Fezzan, and from thence to Caſhna: he will continue as long as he is able in the interior of Africa, and will return either weſtward by Senegambia, or eaſtward by Ethiopia. He is in good health and ſpirits, and the country agrees well with him.

The following account of the fair ſex in Egypt, is extracted from a letter written by a French philoſopher, who went thither with Buonaparte.—"The women never appear in the ſtreets without a maſk. I have heard the fine ladies of Paris, who are diſcontented with the revolution, ſay, that they would rather live in Turkey than in the republic. Let them come here, and ſee how they would

like the change. Here woman appears to be convinced that she is of a species inferior to man; and in fact she is only his servant. The wives of the richest individuals do all the drudgery work of the kitchen. Women carry the mortar and stones to the builders, but still with masks on their faces. I never in my life saw such disgusting figures. These women, who dare not appear in the streets without their veils, remain until the age of ten entirely naked. Every day we meet girls of this age without any covering. They neither blush themselves, nor make others blush, when they are seen in this condition. What will be said of this fact by those who maintain that modesty is an innate principle? For our observation we are inclined to believe that this delicate sentiment has its sole foundation in arbitrary institutions, in simple conventions, the objects of which vary in different countries. Here it is an offence against modesty for a woman to have her countenance uncovered; it is indecent to shew her hand; but they take no care to conceal the bosom and other parts of the body."

The wives of the mamelucks, on whose superior charms historians have so long and universally dwelt, are female slaves, brought from Georgia, Mingrelia, &c. Their beauty is a constant topic, and universally received on the credit of fame. But an European, who has only been in Turkey, has no right to give his testimony on the subject. These women are more invisible here than in any other quarter, and to this they are probably indebted for the reputation of paramount beauty. I had an opportunity of learning some particulars concerning them from the wife of one of our merchants at Cairo, who, by dealing in the laces and stuffs of Lyons, had access to all the harems. This lady, who has more than one claim to form a correct judgment of them, assured me, that, among a thousand or twelve hundred chosen women that she had seen, she had not beheld ten real beauties! But the Turks are not difficult: provided a woman be fair, she is handsome; and if she be fat, she is enchanting: when they express their sense of superlative beauty, they exclaim—"Her haunches are like cushions, and her face resembles the full-moon!" They have a natural proverb, worthy the notice of naturalists: "Take a fair female for thine eye from the frigid north, but an Egyptian to thy arms from the more genial climate of the south!"

KOTZEBUE's OBSERVATIONS ON SOCIETY.

WE are apt to say, that when a person has, by reputation, riches, or promotion, acquired a high station in the world, he forgets his former frinds, and ceases to have any regard for them; but, in fact, his former friends much oftener cease to have any regard for him; nay, even hate him from motives of jealousy and envy. Nevertheless, they formerly, with great sincerity, wished him all the good fortune which he now possesses, and assisted him, with all their power, in obtaining it. Now, when he has obtained it, they hate him. How happens this? Vanity wore the mask of friendship; for we much oftener interest ourselves in behalf of an acquaintance through vanity, than through real regard. We wish to see him elevated to a certain height, in order that we may say, "he, who is so much exalted, is our friend:" But, as soon as his splendor begins to dazzle our eyes, we close them, and walk displeasedly away. "He

"He is a good kind of a man," I have often heard people ſay; and, when I aſked the reaſon, I have always found, they only called him a *good kind of a man* becauſe he diſtinguiſhed himſelf in no way whatever; or, in other words, becauſe he was a cypher. The man moſt certain to be eſteemed, is he who neither by the endowments of genius nor of fortune ſtands in the way of any other.

There are ſome people who are diſliked by all; even by thoſe whom they themſelves like. Others have the happy talent of inſinuating themſelves into the favour of every one; even of thoſe to whom they, on many accounts, might be obnoxious.—Others, again, are very agreeable to thoſe whom they like, but towards thoſe whom they diſlike cannot aſſume a conſtrained civility. Perhaps I belong to the laſt deſcription of men, and therefore own the juſtice of that gentleman's remark, who once adviſed a perſon, whom I by no means liked, not to aſſociate with me: "For," argued he, very wiſely, "if he impoſes no conſtraint upon himſelf, in his conduct towards you, I am certain you cannot live with him; and, if he does impoſe any conſtraint upon himſelf, I am equally certain that he cannot live with you."

A perſon, without whom we cannot live, is very dear to us, but a perſon, who cannot live without us, is much dearer; for he inſpires the gratitude of vanity, and that is the moſt ſincere of all gratitudes.

The art of acquiring friends is often leſs neceſſary than that of avoiding enemies. The friend aſſiſts you in riſing, and the enemy may not have been able to prevent it. But now you ſtand above, where it is more difficult to preſerve the equipoiſe than it was below upon fate ground, the enemy comes behind you; gives you a ſlight blow on the back, and down you fall.

Ten enemies are ſometimes created in obtaining one friend, whoſe friendſhip is envied by thoſe ten. They are ſure to pour forth a volley of accuſations, to make every weakneſs a crime, every fault a vice, every ſingle tranſaction a daily cuſtom, every ſuſpicion a certainty. If I like, now and then, to look at a pretty girl, I'm a libertine; if I have the unhappy talent of ſometimes being ſevere at a blockhead's expence, I have a bad heart; if I, by chance, among ſome jovial friends, drink rather too freely, I am nothing leſs than an habitual drunkard. A thouſand times worſe is it, if, in the liſt of enemies, there is any of the increaſing ſectaries, who affect a higher degree of piety than their neighbours. Their pious diſpoſitions are not content with love and hatred; they either adore or abhor. But of all enemies in the world, the very worſt is a learned woman. If, added to this, ſhe be unmarried, and in her wane, the caſe is deſperate indeed: for, if I were to carry her in my arms to Rome, (as I have heard people ſay,) and, after all my fatigues, lay her down at the gate not very ſoftly, it would be ſufficient to make her my enemy.

I have heard ſome people ſay, they can wrap themſelves in the cloak of innocence, and treat detraction with contempt; but this ſeems to me a very difficult thing. Slander is like a heavy ſhower, and, though you may ſtand dry beneath the pentice of your conſcience, the world does not ſee it; and, what is ſtill worſe, will not ſee it. Men, in this reſpect, differ from angels; they have more joy over one fallen sinner than over an hundred juſt perſons.

It

It is remarkable what an antipathy may be created by not accepting the offer of any great man's patronage. I have experienced this in a certain learned gentleman, who offered me his aſſiſtance, and whom I can in no other way have offended, than in not having had occaſion to avail myſelf of it.

He is wiſe who complains againſt no one, for he thereby avoids or choaks many animoſities. If the enemy be not converted by patience, he is, at all events, diſarmed.

"But," I hear ſome one ſay, "the man who has an unjuſt diſlike of another, does not deſerve to be ſpared." Right; but I am not arguing upon what *he* deſerves. I am pointing out what is advantageous to *you*. You ſhould appeaſe his hatred for *your own* ſake, not for his. And, truly, this is often eaſier to be done than is ſuppoſed. Be reſpectful towards your enemy, and he will feel flattered by that reſpect. Often has an inveterate ſlanderer been thereby converted to a warm defender.

The greater the acknowledged merits of any one, the more ſevere will be the ſentence paſſed upon any of his defects, real or imaginary. In the works of a man of genius, and in the conduct of an upright man, much trouble is taken to diſcover blemiſhes. On the contrary, many allowances are made for an author of inferior abilities, and a villain, becauſe they have already beaten a broad track, on which they are allowed to range at large. We are ready enough to find faults and blemiſhes in a man who has gained univerſal eſteem, but we feel no difficulty in bringing to light the good ſide of a perſon who is univerſally decried. A decided fool, or a decided raſcal, has at leaſt the advantage, that he is either no longer, in the ſmalleſt reſpect, the ſubject of converſation, or that any little thing, which can be ſaid in his favour, is loudly proclaimed—for every thing which can be ſaid againſt him is already known, and conſequently no longer intereſting.

To people of good ſenſe this maxim is often uſed:

Be not too confident.—Why is not the ſame ſaid to affected fools? Have they alone the privilege of being confident?

Alas! yes. Too true it is, they have this privilege. A fool may with impunity expoſe his ſilly pride, and ridiculous vanity. He is laughed at; and the world would be angry if he improved, becauſe it would loſe an object of deriſion. One of the greateſt advantages, therefore, which fools enjoy, is, that they need never be diffident.

Tradeſmen often give credit, or they would ſell but little: they have alſo often loſſes. It is exactly the ſame in ſociety, when we exchange civilities and attentions. The whole ſpeculation is ſometimes loſt; but ſuch a loſs makes us poor in no greater a degree than as we loſe courage to make a farther venture.

As we are obliged to live among mankind as if we loved and reſpected them, would it not be better if we endeavoured to love and reſpect them in reality? Alas! I have made many endeavours, and many have been fruitleſs.

Envy is unfortunately one of the moſt natural paſſions which agitate the mind of man. If we do not envy another's merit, we envy, at leaſt, his reputation, which is the conſequence of that merit. We admire a reſerved man of abilities, becauſe we, at the ſame time, think we ſhall diſcover his hidden abilities, and becauſe we

thereby pay a compliment to our own penetration and judgment. Where the veil of reserve is wanting, to deserve esteem is often a hindrance to the attainment of it.

It is only a heart replete with goodness and philanthropy which can pardon the superior understanding of another. He who endeavours, by his genius and understanding, to please mankind, acts as absurdly as if he were to introduce himself to a patron through the interference of that patron's deadliest foe.

Why are the men of this age more polite to each other, and less polite to the ladies, than in former times?

They are more polite to each other, because they have more sense and less courage, than they had two centuries ago. They feel that it is a folly to be engaged in eternal quarrels and combats; they therefore avoid them, by an increase of civility and respect. There are more reasons why they are less polite to the ladies. In the first place, the ladies (with all due respect be it said) are not quite so domestic, or virtuous, as their great grandmothers. Secondly, the former heroic attachment of knights, and the slavery attached thereto, are extinguished. We love in quite a different way. We have other things in our heads. We think more of money than of fame in arms. The knights of former times had nothing to do, but to weild the lance and love their mistresses; they therefore attended to these two pursuits with all their ardour.

The world will sooner pardon a vicious than a ridiculous man; and it is dreadful truth, that almost every man had rather appear vicious than ridiculous, if the choice were in his power.

To think unlike the world is courage of the mind. To avow such thoughts is courage of the heart, and—*folly*.

There are many things which the fool believes he knows perfectly, and which the wise man despairs lest he should never know.

MEMOIRS OF JOHN WOLCOTT, M. D.

THIS gentleman, better known by his poetical appellation of PETER PINDAR, is a native of that part of Devonshire which has been called the Garden of England. He was educated, we believe, at Kingsbridge, near which he was born. The school-master of that town, an exceeding good scholar, and a man of most amiable manners, was a quaker.

The uncle of our bard being a single man, and established at Fowey, in Cornwall, as an apothecary, took his nephew, when young, with a view to his succeeding him in his business. Here he acquired a tolerable share of medical knowledge; and was in great esteem with his kinsman, and the neighbourhood. At his leisure hours he cultivated his mind by the perusal of the best modern writers; and improved himself considerably in the art of drawing, to which he shewed an early propensity.

On the appointment of Sir William Trelawney to be governor of Jamaica, about the year 1769, Mr. Wolcott felt a strong inclination to accompany him, especially as that gentleman was a distant relation of his own, and a great friend to the family. He accordingly pressed his uncle, not only to give his consent to the project, but also to solicit the favour from Sir William.

The old gentleman was at first extremely concernd at this turn in his

his nephew's mind. It was a complete overthrow of his favourite ſcheme reſpecting him, and it was moreover depriving himſelf of a moſt uſeful aſſiſtant. Remonſtrances, however, were vain; and therefore, with the greateſt good nature, he waited upon the governor, and obtained the favour that the young adventurer ſhould make one in his ſuite.

In the voyage the ſhip touched at Madeira, where Peter, enchanted with the beauties which nature ſo luxuriantly exhibits in that iſland, wrote ſome exquiſite ſonnets. On his arrival at Jamaica, he commenced ſurgeon, with which he blended the practice of phyſic, and was actually nominated phyſician-general to the iſland. A circumſtance however occurred that diverted him for ſome time from his medical career, and threw him into the arms of a profeſſion, for which few men were ever leſs qualified.

The incumbent of the moſt valuable living in Jamaica happened to pay the laſt tribute to nature not long after the doctor ſettled there. Whether his practice had not been ſufficiently lucrative, or what other motive poſſeſſed him, we know not, but certain it is, he looked upon the vacant rectory with a wiſhful eye. As there was no clergyman at hand to ſupply the place of the deceaſed, the phyſician of the body commenced phyſician of the ſoul, and actually officiated for a conſiderable time in this capacity, reading the prayers of the church of England, and preaching occaſionally. Fearing at length, that he ſhould be ſuperſeded, by a regular miniſter properly inſtituted to the living, the doctor ſet out for England, carrying with him ſtrong letters of recommendation to the Biſhop of London, that he might not only be ordained, but alſo be appointed to the church which he had ſerved. But, though his application was backed pretty ſtrongly by ſome very conſiderable friends in England, the biſhop refuſed to admit him, on the ground, we believe, of his having preſumed to perform the miniſterial duties without being properly licenſed thereto.

In conſequence of this diſappointment, the doctor declined reviſiting his patients and pariſhioners in the Weſt Indies; but, having previouſly obtained the degree of M. D. from one of the Scotch univerſities, he went down to the place of his former reſidence, and, after living there ſome time, removed to Truro, where he practiſed for ſeveral years as a phyſician, with great credit and ſucceſs. About this time his uncle died, and left him nearly two thouſand pounds.

The doctor's ſatirical vein ſhewed itſelf on various occaſions in Cornwall; particularly in ſome humorous jokes, which he played off upon the late Mr. Roſewarne, of Truro, and other gentlemen of the neighbourhood. He was alſo engaged in ſome troubleſome and expenſive lawſuits; one of which was with the corporation of Truro, relative to their right of putting upon him a pariſh apprentice. In conſequence of theſe diſputes, he found that part of the world diſagreeable, and therefore reſolved to quit it for a ſphere more congenial to his talents and diſpoſition.

During his reſidence in this country, the doctor had an opportunity of bringing forward to the world an eminent natural genius, who otherwiſe might have been buried in total oblivion, or at the moſt have been a ſign-painter in his native country. The perſon we allude to was John Opie, whoſe rude drawings in common chalk, eſpecially likeneſſes, our doctor viewed with ſome curioſity and admiration

miration in his rides through the village of St. Anne, where Opie was a parish apprentice to one Wheeler, a house carpenter. These drawings were so superior to what could be expected in such a place, and from such a person, that the physician was induced to become his instructor and his patron. He accordingly furnished him with materials, and gave him lessons, by which he profited in a manner that surprised and delighted the benevolent tutor. Having made a rapid progress, Opie went to Exeter, where he acquired some knowledge of oil painting. From that city he removed to London, and under Sir Joshua Reynolds became one of the most eminent artists of the age.

Our author's first literary production was an "Epistle to the Reviewers," 4to. 1782, a truly laughable piece of satire, and certainly discharged against fair game. His next performance was "Odes to the Royal Academicians," 1785, in which is a happy mixture of wit, taste, and elegance, but at the same time it must be allowed, that a want of candour distinguishes the criticisms, and particularly with respect to the paintings of Mr. West.

In the year following, he published another set of odes to the members of the Royal Academy, bearing the same characteristics. About the same time he produced a performance of more originality and boldness. This was the Lousiad, a mock-heroic poem, abounding in wit, humour, and strength. The foundation on which our satirist erected this lively piece, was this:—His majesty one evening at supper observed a human hair upon his plate, among some green pease. This offensive object occasioned a decree to be issued forth, that all the cooks, scullions, &c. in the royal kitchen, should have their heads shaved. Great murmurings were excited by this mandate; but the law, like that of the Medes and Persians, was irrevocable. On this incident, Peter formed his exquisite production; only changing the hair, by virtue of the *licentia poetica*, to a living animal.

His next production was an epistle to James Boswell, Esq. the self-sufficient attendant upon Dr. Johnson to the Hebrides. This was followed by "Bozzi and Piozzi," in which the folly of tittle-tattle biographers is exposed in the happiest manner.

The greatest success attended our author's publications. Never did any satirist display such various excellence. Those who disapproved his sentiments, and were offended at his freedom and want of respect for authority, could not read his poems with unmoved muscles. To give a catalogue of his numerous writings would be needless. There can be no occasion to specify at length what is universally known, and as universally admired. Though our author has shone most conspicuously as a satirist, and here indeed his splendour has been of an extraordinary brilliancy, yet the reader of his sonnets will sometimes be disposed to regret his having devoted so much of his time and genius to temporary and personal subjects.

The doctor, we understand, lately superintended a new edition of Pilkington's Dictionary of Painters, to which he made some additions. Before we conclude, it may not be amiss to remark, that in his conversation our satirist does not exhibit either that facetiousness or acerbity which are so eminently displayed in his works.

Our poet, we believe, once more practises as a physician. Lately recovered from an asthma, he has acquired an intimate acquaintance

with the theory of that diſeaſe, and is himſelf a living inſtance, that with ſkilful management it is not fatal, even in its laſt and worſt ſtages. He has alſo minutely inveſtigated the ſtructure of that delicate organ, the human ear. This is a ſpecies of knowledge neither to be obtained on the ſummit of Parnaſſus, nor drawn from the fountain Hippocrene; but, there is a certain univerſality in genius, which, indeed, conſtitutes one of its chief characteriſtics.

STATE OF FRENCH LITERATURE FOR JUNE, 1799.

FEW literary articles worth notice were produced in May. Two poſthumous works are much read: the New Don Quixote, by Florian; and an Eſſay upon Fables and their Hiſtory, by Bailly the aſtronomer. La Harpe's Courſe of Ancient and modern Literature is a work of conſiderable merit.

Several new pieces have been brought out at the different theatres, but with little ſucceſs. A new theatre De Vaudeville, has been opened under the direction of Leger, and under the title of the Theatre des Troubadours. Tivoli, the Gardens of Idalia, and Elyſeum, were opened this month, and numerouſly attended.

A fragment of the tranſlation of the fourth Æneid, by Delille, has been read in a literary ſociety, and received with diſtinguiſhed applauſe.

The well-known muſician Girouſt died lately at Verſailles, where for ſome time paſt he lived under the preſſure of old age and poverty. While yet young, he obtained two prizes for two different compoſitions on one ſubject. He was muſic-maſter to the Innocents, and directed the Spiritual Concert at Paris. He was ſuperintendant of the muſic of the king's chapel at the time of the diſſolution of that eſtabliſhment. Though appointed keeper of the national palace of Verſailles, he ſtill continued to compoſe civic ſongs for the decadary and national fetes. He was the compoſer of the muſic of that well-known piece—"*Nous ne reconnaiſſons ſous l'empire des lois*," &c. He ſet to muſic part of the Ode to Time, by Thomas, and the moſt ſtriking paſſages of the Epiſtle to the People, by the ſame author. The miniſter of the interior, who was not informed until too late of the diſtreſſed ſtate of Girouſt's affairs, advanced him a gratuity of eight hundred franks in the name of the government; but he was then ſinking under the long neglect which he had experienced on the part of the predeceſſors of the preſent miniſter. At the period of his death, he uſed to ſell milk and honey to the inhabitants of Verſailles.

The celebrated Piccini continues to employ the evening of his life to advantage, in the exerciſe of his talents; he has not yet allowed his lyre to repoſe. He publiſhes a journal for the voice and the piano-forte. The vocal parts and the accompaniments for the flute, violin, and baſs, are by Piccini: the accompaniments for the piano-forte, are by Deſſormery and Bouffet, whoſe knowledge of theſe inſtruments is well-known. It ſeems to be the intention of the editors that each number of this journal ſhall contain an Italian air, a French ſong, and a piece for the piano-forte.

French literature has experienced a conſiderable loſs.—Pierre Auguſtin Carron de Beaumarchais died about a month ago of an apoplexy. He was buried in his own garden at Paris, and Collen-Harteville pronounced over him a ſhort funeral oration, which

C. Guidin,

C. Guidin, who wrote it, could not, through grief, deliver himſelf. The genius of Beaumarchais was various—it adapted itſelf with equal facility to literature and to buſineſs, to commerce and to politics. The principles inculcated in his operas—Tarare, Marriage of Figaro, &c. are ſufficiently known. It is ſaid that ſome Engliſhmen had ſo high an opinion of the ſteady principles of Beaumarchais, and of the firmneſs of the character, that they called him, under the old government, The only free man in France; and letters thus directed actually reached him. The elevation of his ſoul kept pace with his genius. He embraced, with a moſt comprehenſive and ever active ſpirit, whatever object he thought conducive to the public weal, in politics, literature, and commerce. On the breaking out of the American war, he ſhewed himſelf, as might be expected from a man of his principles, a very warm ſupporter of the cauſe of America, and ſent over to that country, from France, immenſe ſupplies of arms, ammunition, and clothing, at the riſk of his fortune and his liberty; he is ſaid even to have contributed to the concluding of the treaty of alliance which the French miniſter formed with the congreſs, in ſpite of all the endeavours of the Engliſh miniſter, Lord Stormont, to prevent it. He never flattered governors nor their miniſters, nor did he ever ſtoop to hate them. He defended with warmth both his friends and enemies from the envenomed tooth of calumny, and called himſelf the advocate of the abſent. He demeaned himſelf ever with mildneſs and generoſity towards thoſe who, through envy and jealouſy of his ſuperior talents, made him the conſtant object of their detraction and revilings. His manners in private life were ſimple and modeſt, and gained him the love of all who had the happineſs to be admitted to his intimacy. His relations were enriched by the fruits of his induſtry and his talents; his domeſtics grew grey in his ſervice; and the companions of his youth were the friends of his more advanced age.

The muſeum of antiques at Paris is to be opened for the public inſpection in September.—Rooms are building for the five ſtatues which have been brought from Italy—the Apollo of Belvidere, the Muſes, and the Laocoön, are to be placed in a large room prepared on purpoſe. Great pains are taking that the light ſhall be thrown into the room in ſuch a manner, that the ſtatues ſhall be ſeen to better advantage, if poſſible, than they were at Rome.

On the INVENTION of COACHES.

IF by this name we are to underſtand every kind of covered carriage, in which one can with convenience travel, there is no doubt that ſome of them were known to the ancients. The *arcera*, of which mention is made in the twelve tables, was a covered carriage uſed by ſick and infirm perſons. It appears to have been employed earlier than the ſoft *lectica*, and by it to have been brought into diſuſe. A later invention is the *carpentum*, the form of which may be ſeen on antique coins, where it is repreſented as a two-wheeled car, with an arched covering, and which was ſometimes hung with coſtly cloth. Still later were introduced the *carrucæ*, firſt mentioned by Pliny; but ſo little is known of them that antiquaries are uncertain whether they had only one wheel, like our wheel-barrows, or, as is more probable, four wheels. This much, however,

is known, that they were firſt-rate vehicles, ornamented with gold and precious ſtones, and that the Romans conſidered it as an honour to ride in thoſe that were remarkably high. In the Theodoſian code the uſe of them is not only allowed to civil and military officers of the firſt rank, but commanded as a mark of their dignity.

After this, covered carriages ſeem more and more to have become appendages of Roman pomp and magnificence; but the manner of thinking which prevailed under the feudal ſyſtem baniſhed the uſe of them, for ſome time. As it was of the greateſt importance to the feudal lords that their vaſſals ſhould be always able to ſerve them on horſeback, they could not think of indulging them with elegant carriages. They foreſaw, that by ſuch luxury the nobility would give over riding on horſeback, and become much more indolent, and leſs fit for military ſervice. Maſters and ſervants, huſbands and wives, clergy and laity, all rode upon horſes or mules, and ſometimes women and monks more commodiouſly upon ſhe-aſſes. The miniſter rode to court; and the horſe, without any conductor, returned alone to his ſtable, till a ſervant led him back to court to fetch his maſter. In this manner rode the magiſtrates of the imperial cities to council, in the beginning of the ſixteenth century; ſo that, in the year 1502, ſteps to aſſiſt in mounting were erected by the Roman gate at Franckfort. The members of the council, who, at the diet, and on other occaſions, were employed as ambaſſadors, were, on this account, called *rittmeiſter*; and even at preſent the expreſſion *riding ſervant* is preſerved in ſome of the imperial cities. The public entry of great lords into any place, or their departure from it, was never in a carriage, but on horſeback; and, in all the works which ſpeak of the papal ceremonies, there is no mention of a ſtate-coach, or body-coachman, but of ſtate-horſes, or ſtate-mules. It was neceſſary that a horſe for his holineſs ſhould be of a grey colour; not mettleſome, however, but a quiet tractable nag; that a ſtool with three ſteps ſhould be brought to aſſiſt him to mount, and the emperor and kings, if preſent, were obliged to hold his ſtirrup, and to lead the horſe, &c. Biſhops made their public entrance on horſes or aſſes richly decorated. At the coronation of the emperor, the electors and principal officers of the empire were ordered to make their entrance on horſes, and to perform their ſervice on horſeback. Formerly it was neceſſary that thoſe who received an inveſtiture ſhould make their appearance on horſeback: the vaſſal was obliged to ride with two attendants to the lord's court, where, having diſmounted from his horſe, he received his fief.

Covered carriages were known in the beginning of the ſixteenth century; but, they were uſed only by women of the firſt rank, for the men thought it diſgraceful to ride in them. At that period, when the electors and princes did not chooſe to be preſent at the meetings of the ſtates, they excuſed themſelves by informing the emperor that their health would not permit them to ride on horſeback; and it was conſidered as a point eſtabliſhed, that it was unbecoming for them to ride like women. What, according to the then prevailing ideas, was not allowed to princes, was much leſs permitted to their ſervants. In the year 1544, when Count Wolf of Barby, was ſummoned by John Frederic elector of Saxony to go to Spires to attend the convention of the ſtates aſſembled there, he requeſted leave, on account of his ill ſtate of health, to make uſe of a

close carriage with four horses. When the counts and nobility were invited to the marriage solemnity of the elector's half-brother, Duke John Ernest, the invitation was accompanied with a memorandum, that what dresses of ceremony they might be desirous of taking with them they should transport in a small waggon. Had they been expected in coaches, such a memorandum would have been superfluous. The use of covered carriages was, for a long time, forbidden even to women. In the year 1545, the wife of a certain duke obtained from him, with great difficulty, permission to use a covered carriage in a journey to the baths, in which, however, much pomp was displayed; but with this express stipulation, that her attendants should not have the same indulgence. It is nevertheless certain, that the emperor, kings, and princes, about the end of the fifteenth century, began to employ covered carriages on journeys, and afterwards on public solemnities.

In the year 1474, the Emperor Frederic III. came to Franckfort in a close carriage: and, as he remained in it on account of the wetness of the weather, the inhabitants had no occasion to support the canopy which was held over him, but while he went to the council-house, and again returned. In the year following, the emperor visited the same city in a very magnificent covered carriage. In the description of the splendid tournament held by Joachim elector of Brandenburg, at Ruppin, in 1509, we read of a carriage all gilt over, which belonged to the electress; of twelve other coaches, ornamented with crimson, and of another of the Duchess of Mecklenburg, which was hung with red satin. At the coronation of the Emperor Maximilian, in the year 1562, the Elector of Cologne had twelve carriages. In 1594, when the margrave John Sigismund did homage at Warsaw on account of Prussia, he had in his train thirty-six coaches with six horses each. Count Kevenhiller, speaking of the marriage of the Emperor Ferdinand II. with a Princess of Bavaria, says, "The bride rode with her sisters in a splendid carriage studded with gold; her maids of honour in carriages hung with black satin, and the rest of the ladies in neat leather carriages." The same author mentions the entrance of Cardinal Dietrichstein into Vienna, in 1611, and tells us that forty carriages went to meet him. At the election of the Emperor Matthias, the ambassador of Brandenburg had three coaches. When the consort of that emperor made her public entrance, on her marriage, in 1611, she rode in a carriage covered with perfumed leather. Mary, Infanta of Spain, spouse of the succeeding emperor, Ferdinand III. rode, in Carinthia, in 1631, in a glass-carriage in which no more than two persons could sit. The wedding carriage of the first wife of the Emperor Leopold, who was also a Spanish princess, cost together with the harness 38,000 florins. The coaches used by that emperor are thus described by Kink: "In the imperial coaches no great magnificence was to be seen: they were covered over with red cloth and black nails. The harness was black, and in the whole work there was no gold. The pannels were of glass, and on this account they were called the imperial glass coaches. On festivals the harness was ornamented with red silk fringes. The imperial coaches were distinguished only by their having leather traces; but the ladies in the imperial suite were obliged to be contented with carriages the traces of which were made of ropes." At the magnificent

ficent court of Duke Erneſt Auguſtus, at Hanover, there were, in the year 1681, fifty gilt coaches with ſix horſes each; ſo early did Hanover begin to ſurpaſs other cities in the number of its carriages. The firſt time that ambaſſadors appeared in coaches, on a public ſolemnity, was at the imperial commiſſion holden at Erfurth, in 1613, reſpecting the affair of Juliers.

The great lords imagined at firſt that they could ſuppreſs the uſe of coaches by prohibitions. In the Churmark archives there is ſtill preſerved an edict, in which the feudal nobility and vaſſals are forbid the uſe of coaches, under pain of incurring the puniſhment of felony. In the year 1588, Duke Julius of Brunſwic publiſhed an order, couched in very expreſſive terms, by which his vaſſals were forbid to ride in carriages. This curious document is in ſubſtance as follows:—"As we know from ancient hiſtorians, from the annals of heroic, honourable, and glorious, achievements, and even by our own experience, that the reſpectable, ſteady, courageous, and ſpirited, Germans, were heretofore ſo much celebrated among all nations, on account of their manly virtue, ſincerity, boldneſs, honeſty, and reſolution, that their aſſiſtance was courted in war, and that, in particular, the people of this land, by their diſcipline and intrepidity, both within and without the kingdom, acquired ſo much celebrity, that foreign nations readily united with them: we have, for ſome time paſt, found, with great pain and uneaſineſs, that their uſeful diſcipline and ſkill in riding, in our electorate, county, and lordſhip, have not only viſibly declined, but have been almoſt loſt (and, no doubt, other electors and princes have experienced the ſame among their nobility); and as the principal cauſe of this is that our vaſſals, ſervants, and kinſmen, without diſtinction, young and old, have dared to give themſelves up to indolence and to riding in coaches, and that few of them provide themſelves with well-equipped riding horſes, and with ſkilful experienced ſervants, and boys acquainted with the roads: being not able to ſuffer, any longer, this neglect, and being deſirous to revive the ancient Brunſwic mode of riding, handed down and bequeathed to us by our forefathers, we hereby will and command, that all and each of our before-mentioned vaſſals, ſervants, and kinſmen, of whatever rank or condition, always keep in readineſs as many riding-horſes as they are obliged to ſerve us with by their fief, or alliance; and have in their ſervice able experienced ſervants, acquainted with the roads; and that they have as many horſes as poſſible, with poliſhed ſteel furniture, and with ſaddles proper for carrying the neceſſary arms and accoutrements, ſo that they may appear with them when neceſſity requires. We alſo will and command our before-mentioned vaſſals and ſervants to take notice, that when we order them to aſſemble, either all together, or in part, in times of turbulence, or to receive their fiefs, or when on other occaſions they viſit our court, they ſhall not travel or appear in coaches, but on their riding horſes, &c." Philip II. duke of Pomerania-Stetten, reminded his vaſſals alſo, in 1608, that they ought not to make ſo much uſe of carriages as of horſes. All theſe orders and admonitions, however, were of no avail, and coaches became common all over Germany.

It would be difficult to give an exact deſcription of theſe carriages without a figure, and drawings or paintings of them do not ſeem to be common.

In

In the hiſtory of France we find many proofs that at Paris, in the fourteenth, fifteenth, and even ſixteenth, centuries, the French monarchs rode commonly on horſes, the ſervants of the court on mules, and the princeſſes, together with the principal ladies, ſometimes on aſſes. Perſons of the firſt rank often ſat behind their equerry, and the horſe was often led by ſervants. When Charles VI. wiſhed to ſee incognito the entrance of the queen, he placed himſelf on horſeback behind Savoiſy, who was his confidant, with whom, however, he was much incommoded in the crowd. When Louis duke of Orleans, that prince's brother, was aſſaſſinated in 1407, the two *ecuyers* who accompanied him rode both upon the ſame horſe. In the year 1534, Queen Eleonora and the princeſſes rode on white horſes during a ſacred feſtival. That private perſons alſo, ſuch as phyſicians for example, uſed no carriages in the fifteenth century, is proved by the principal entrance to their public ſchool, which was built in 1472, being ſo narrow that a carriage could not paſs through it, though it was then one of the wideſt at their period. In Paris alſo, at all the palaces and public buildings, there were ſteps for mounting on horſeback, ſuch as thoſe which the parliament cauſed to be erected in 1599; and Sauval ſays on this occaſion, that, though many of theſe ſteps in latter periods had been taken away, there ſtill remained ſeveral of them in his time at old buildings.

Carriages, however, appear to have been uſed very early in France. An ordinance of Philip the Fair, iſſued in 1294, for ſuppreſſing luxury, and in which the citizens' wives are forbid to uſe carriages, is ſtill preſerved. Under Francis I. or rather about 1550, ſomewhat later, there were at Paris, for the firſt time, only three coaches, one of which belonged to the queen, another to Diana de Poictiers, the miſtreſs of two kings, Francis I. and Henry II. by the latter of whom ſhe was created Ducheſs of Valentinois, and the third to René de Laval lord of Bois-dauphin. The laſt was a corpulent unwieldy nobleman, who was not able to ride on horſeback. Others ſay, that the three firſt coaches belonged to Catherine de Medicis; Diana ducheſs of Angoulême, the natural daughter of Henry II. who died in 1619 in the eightieth year of her age: and Chriſtopher de Thou, firſt preſident of the parliament. The laſt was excuſed by the gout; but the reſt of the miniſters of ſtate ſoon followed his example. Henry IV. was aſſaſſinated in a coach; but he uſually rode through the ſtreets of Paris on horſeback, and, to provide againſt rain, carried a large cloak behind him. For himſelf and his queen he had only one coach; as appears by a letter ſtill preſerved, in which he writes to a friend, "I cannot wait upon you to-day, becauſe my wife is uſing my coach." We, however, find two coaches at the public ſolemnity on the arrival of the Spaniſh ambaſſador, Don Peter de Toledo, under Henry IV. This contradiction is a circumſtance which is not worth farther reſearch; but it ſhews that all writers do not ſpeak of the ſame kind of carriages or coaches, and that every improvement has formed as it were an epoch in the hiſtory of them, which perhaps would be beſt elucidated by figures or engravings.

Roubo, in his coſtly treatiſe on joiners' work, has given three figures of ſuch carriages as were uſed under Henry IV. from drawings preſerved in the king's library. By theſe one ſees that thoſe coaches were not ſuſpended by ſtraps, that they had a canopy ſupported

ported by ornamented pillars, and that the whole body was surrounded by curtains of ſtuff or leather, which could be drawn up. The coach in which Louis XIV. made his public entrance, about the middle of the laſt century, appears, from a drawing in the king's library, to have been a ſuſpended carriage.

The oldeſt carriages uſed by the ladies in England were known under the now-forgotten name of *whirlicotes*. When Richard II. towards the end of the fourteenth century, was obliged to fly before his rebellious ſubjects, he and all his followers were on horſeback; his mother only, who was indiſpoſed, rode in a carriage.—This however became afterwards ſomewhat unfaſhionable, when the monarch's queen, Anne, the daughter of the Emperor Charles IV. ſhewed the Engliſh ladies how gracefully and conveniently ſhe could ride on a ſide-ſaddle. Whirlicotes were laid aſide, therefore, except at coronations and other public ſolemnities.

Coaches were firſt known in England about 1580; and, as Stowe ſays, were introduced from Germany by Fitz-allen earl of Arundel. In the year 1598, when the Engliſh ambaſſador came to Scotland, he had a coach with him. Anderſon places the period when coaches began to be in common uſe about the year 1605. The celebrated Duke of Buckingham, the unworthy favourite of two kings, was the firſt perſon who rode with a coach and ſix horſes, in 1619: to ridicule this new pomp, the Earl of Northumberland put eight horſes to his carriage.

Towards the end of the thirteenth century, when Charles of Anjou made his entrance into Naples, the queen rode in a carriage called by hiſtorians *caretta*, the outſide and inſide of which were covered with ſky-blue velvet, interſperſed with golden lilies, a magnificence never before ſeen by the Neapolitans. At the entrance of Frederic II. into Padua, in the year 1239, it appears there were no carriages, for the moſt elegantly dreſſed ladies that came to meet him were on palfreys ornamented with trappings. It is well known that the luxury of carriages ſpread from Naples all over Italy.

Coaches were ſeen for the firſt time in Spain in the year 1546; at leaſt ſuch is the account of Twiſs, who, according to his uſual cuſtom, ſays ſo without giving his authority.

Towards the end of the ſixteenth century, John of Finland, on his return from England, among other articles of luxury, carried with him to Sweden the firſt coach that ever had been ſeen there:—before that period, the greateſt lords in Sweden, when they travelled by land, carried their wives with them on horſeback; the princeſſes even travelled in that manner, and when it rained took with them a mantle of waxed cloth.

It appears that there were elegant coaches in the capital of Ruſſia ſo early as the beginning of the ſeventeenth century.

But to what nation are we to aſcribe the invention of coaches?—If under this name we comprehend covered carriages, theſe are ſo old as not to admit of any diſpute reſpecting the queſtion. To the following, however, one might expect an anſwer: Who firſt fell on the idea of ſuſpending the body of the carriage on elaſtic ſprings, by which the whole machine has undoubtedly been much improved? But to this queſtion we can find no anſwer, except the information before mentioned, that ſuſpended carriages were known in the time of Louis XIV.

As

As the name *coach* is now adopted, with a little variation, in all the European languages, ſome have thought to determine the country of this invention from the etymology of the word. It is difficult, however, to determine whence it is derived, as we do not know by whom theſe cloſe carriages were invented. Menage makes it Latin, and by a far-fetched derivation from *vehiculum*; Junius derives it ſomewhat ſhorter from ὀχέω, to carry. Wachter thinks it comes from the German word *kutten*, to cover; and Lye, from the Belgic *koetſen*, to lie along, as it properly ſignifies a couch or chair. But, even allowing that one could fix the origin of the word, it would by no means be aſcertained what kind of a carriage we ought properly to underſtand by it. Mr. Cornides has lately endeavoured to prove, that the word *coach* is of Hungarian extraction, and that it had its riſe from a village in the province of Wieſelburg, which at preſent is called *Kitſee*, but was known formerly by the name of *Kotſee*, and that this travelling machine was even there firſt invented. However this may be, the grounds on which he ſupports his aſſertion deſerve to be here quoted, as they ſeem at leaſt to prove that in the ſixteenth century, or even earlier, a kind of covered carriages were known under the name of Hungarian carriages. As the word *gutſchi*, and not *gutſche*, was uſed at firſt in Germany, the laſt ſyllable gives us reaſon to conjecture, that it is rather of Hungarian than German extraction. As Hortleder tells us that Charles V. becauſe he had the gout, laid himſelf to ſleep in an Hungarian *gutſche*, one might almoſt conclude, that the peculiarity of theſe carriages conſiſted in their being ſo conſtructed as to admit people to ſleep in them. This conjecture is ſupported by the meaning of the word *gutſche*, which formerly ſignified a couch or ſopha. As the writers quoted by Mr. Cornides call the Hungarian coaches ſometimes *leves*, light, ſometimes *veloces*, ſwift, one ought rather to conſider them as a particular kind of carriages for travelling with expedition. It is, however, ſtill more worthy of remark, that, ſo early as the year 1457, the ambaſſador of Ladiſlaus V. king of Hungary and Bohemia, brought with him to the Queen of France, beſides other preſents, a carriage which excited great wonder at Paris, and which, as an old hiſtorian ſays, was *branlant et moult riche*. Does not the firſt word of this expreſſion ſeem to indicate that the carriage was ſuſpended?

A peculiar kind of coach has been introduced in latter times under the name of *berlin*. The name indicates the place which gave birth to the invention, as the French themſelves acknowledge; though ſome, with very little probability, wiſh to derive it from the Italian. Philip de Chieſe, a native of Piedmont, and deſcended from the Italian family of Chieſa, was a colonel and quarter-maſter-general in the ſervice of Frederic William, elector of Brandenburg, by whom he was much eſteemed on account of his knowledge in architecture. Being once ſent to France on his maſter's buſineſs, he cauſed to be built, on purpoſe for this journey, a carriage capable of containing two perſons; which in France, and every where elſe, was much approved, and called a berline. This Philip de Chieſe died at Berlin in 1673.

Coaches have given riſe to a profeſſion which in large cities affords maintenance to a great number of people, and which is attended with much convenience; I mean that of letting out coaches for hire, known under the name of *fiacres*, hackney-coaches. This originated

in France; for about the year 1650 one Nicholas Sauvage firſt thought of keeping horſes and carriages ready to be let out to thoſe who might have occaſion for them. The Pariſians approved of and patroniſed this plan; and as Sauvage lived in the ſtreet St. Martin, in a houſe called the *hôtel S. Fiacre*, the coaches, coachmen, and proprietor, were called *fiacres*. In a little time this undertaking was improved by others, who obtained a licenſe for their new inſtitutions on paying a certain ſum of money. Some kept coaches ready in certain places of the ſtreets, and let them out as long as was required, to go from one part of the city to another. Theſe alone, at length, retained the name of fiacre, which at firſt was common to every kind of hired carriage without diſtinction. Others kept carriages at their houſes, which they let out for a half or whole day, a week, or month: theſe coaches were known by the name of *caroſſes de remiſe*. Others kept carriages which at a certain ſtated time went from one quarter of the city to another, like a kind of ſtages, and took up ſuch paſſengers as preſented themſelves; and, in the year 1662 ſome perſons ſet up carriages with four horſes, for the purpoſe of carrying people to the different palaces at which the court might be. The proprietors often quarrelled reſpecting the boundaries preſcribed to them by their licenſes; and on this account they were ſometimes united into one company, and ſometimes ſeparated. The police eſtabliſhed uſeful regulations, by which the ſafety and cleanlineſs of theſe carriages were promoted; marks were affixed to them, by which they might be known; and young perſons and women of the town were forbidden to uſe them, &c.

A particular kind of hackney carriage, peculiar to the Pariſians, in the opinion of ſome does no great honour to their unbanity. I mean the *brouettes*, called ſometimes *roulettes*, and by way of deriſion *vinaigrettes*. The body of theſe is almoſt like that of our ſedans, but rolls upon two low wheels, and is dragged forwards by men. An attempt was made to introduce ſuch machines under Louis XIII. but the proprietors of the ſedans prevented it, as they apprehended the ruin of their buſineſs. In the year 1669 they were however permitted, and came into common uſe in 1671, but were employed only by the common people. Dupin, the inventor of theſe *brouettes*, found means to contrive them ſo that they did not jolt ſo much as might have been expected; and he was able to conceal this art ſo well, that for a long time he was the only perſon who could make them. The number of all the coaches at Paris is by ſome ſaid to be fifteen thouſand; the author of Tableau de Paris reckons the number of the hackney coaches to amount to eighteen hundred, and aſſerts that more than a hundred foot paſſengers loſe their lives by them every year.

Coaches to be let for hire were firſt eſtabliſhed at London in 1625. At that time there were only twenty, which did not ſtand in the ſtreets, but at the principal inns. Ten years after, however, they were become ſo numerous, that Charles I. found it neceſſary to iſſue an order for limiting their number. In the year 1637, there were in London and Weſtminſter fifty hackney-coaches, for each of which no more than twelve horſes were to be kept. In the year 1652, their number had increaſed to two hundred; in 1654, there were three hundred, for which ſix hundred horſes were employed; in 1694, they were limited to ſeven hundred, and in 1715 to eight hundred.

Hackney-

Hackney-coaches were firſt eſtabliſhed at Edinburgh in 1673. Their number was twenty; but, as the ſituation of the city was unfavourable for carriages, it fell in 1752 to fourteen, and in 1778 to nine, and the number of ſedans increaſed.

Fiacres were introduced at Warſaw for the firſt time in 1778. In Copenhagen there are an hundred hackney-coaches.

In Madrid there are from four to five thouſand gentlemen's carriages; in Vienna three thouſand, and two hundred hackney-coaches.

At Amſterdam coaches with wheels were in the year 1663 forbidden, in order to ſave the expenſive pavement of the ſtreets; for coaches there, even in ſummer, are placed upon ſledges, as thoſe at Peterſburgh are in winter. The tax upon carriages in Holland has from time to time been raiſed, yet the number has increaſed; and ſome years ago the coach-horſes in the Seven United Provinces amounted to twenty-five thouſand.

When Prince Repnin made his entrance into Conſtantinople in 1775, he had with him eighty coaches, and two hundred livery-ſervants.

SPECTRE OF THE BROKEN.

THE Broken is the name of one of the Harz mountains of Hanover in Germany; and is celebrated for reflecting to the eye of a ſpectator a coloſſal figure, called the *ſpectre of the Broken*. The particulars of this extraordinary phenomenon, as given by J. L. Jordan, are explained in Gmelin's Journal of Nature, publiſhed at Gottingen in 1798, and are as follow:

The firſt time I was deceived by this atmoſpheric phenomenon, I had clambered up to the ſummit of the Broken, very early in the morning, in order to wait for the beautiful view of the ſun riſing in the eaſt. The heavens were already ſtreaked with red; the ſun was juſt appearing above the horizon in full majeſty, and the moſt perfect ſerenity prevailed, when the other Harz mountains in the ſouth-weſt, towards the Worm mountains, lying under the Broken, began to be covered by thick clouds. Aſcending at that moment the granite rocks called the Teufelſkanzel, there appeared before me, though at a great diſtance, the gigantic figure of a man, as if ſtanding on a large pedeſtal. But ſcarcely had I diſcovered it when it began to diſappear; the clouds ſunk down ſpeedily and expanded, and I ſaw the phenomenon no more. The ſecond time, however, I ſaw this ſpectre ſomewhat more diſtinctly, a little below the ſummit of the Broken, and near the Heinrichſhöhe, as I was looking at the ſun riſing about four o'clock in the morning. The weather was rather tempeſtuous; the ſky towards the level country was pretty clear, but the Harz mountains had attracted ſeveral thick clouds, which had been hovering around them, and which beginning to ſettle on the Broken confined the proſpect. In theſe clouds, ſoon after the riſing of the ſun, I ſaw my own ſhadow, of a monſtrous ſize, move itſelf for a couple of ſeconds exactly as I moved; but I was ſoon involved in clouds, and the phenomenon diſappeared.

It is impoſſible to ſee this phenomenon, except when the ſun is at ſuch an altitude as to throw his rays upon the body in a horizontal direction; for, if he is higher, the ſhadow is thrown rather under the body than before it. In the month of September, 1798, as I

was making a tour through the Harz. I found an excellent account and explanation of this phenomenon, as ſeen by M. Haue, on the 23d of May, 1797, in his diary of an excurſion to the Broken mountain. I ſhall therefore take the liberty of tranſcribing it.

"After having been here for thirtieth time, (ſays Mr. Haue,) and, beſides other objects of my attention, having procured information reſpecting the above-mentioned atmoſpheric phenomenon, I was at length ſo fortunate as to have the pleaſure of ſeeing it. The ſun roſe about four o'clock, and, the atmoſphere being quite ſerene towards the eaſt, his rays could paſs without any obſtruction over the Heinrichſhöhe. In the ſouth-weſt however, towards Achtermannſhöhe, a briſk weſt wind carried before it thin tranſparent vapours, which were not yet condenſed into thick heavy clouds. About a quarter paſt four I went toward the inn, and looked round to ſee whether the atmoſphere would permit me to have a free proſpect to the ſouth-weſt; when I obſerved, at a very great diſtance towards Achtermannſhöhe, a human figure of a monſtrous ſize. A violent guſt of wind having almoſt carried away my hat, I clapped my hand to it by moving my arm toward my head, and the coloſſal figure did the ſame. The pleaſure which I felt on this diſcovery can hardly be deſcribed; for I had already walked many a weary ſtep in the hopes of ſeeing this ſhadowy image, without being able to gratify my curioſity. I immediately made another movement by bending my body, and the coloſſal figure before me repeated it. I was deſirous of doing the ſame thing once more: but my coloſſus had vaniſhed. I remained in the ſame poſition, waiting to ſee whether it would return, and in a few minutes it again made its appearance on the Achtermannſhöhe. I paid my reſpects to it a ſecond time, and it did the ſame to me. I then called the landlord of the Broken; and, having both of us taken the ſame poſition which I had taken alone, we looked towards the Achtermannſhöhe, but ſaw nothing. We had not, however, ſtood long, when two ſuch coloſſal figures were formed over the eminence, which repeated our compliments by bending their bodies as we did; after which they vaniſhed. We retained our poſition; kept our eyes fixed on the ſame ſpot, and in a little time the two figures again ſtood before us. Every movement that we made by bending our bodies theſe figures imitated; but with this difference, that the phenomenon was ſometimes weak and faint, ſometimes ſtrong and well-defined. Having thus had a ſufficient opportunity of examining the *ſpectre of the Broken*, I am enabled to give the following explanation of the curious phenomenon, which has ſo long been the wonder of travellers: When the riſing ſun, and according to analogy the caſe will be the ſame at the ſetting ſun, throws his rays over the Broken upon the body of a man ſtanding oppoſite to fine light clouds floating around or hovering paſt him, he needs only fix his eyes ſtedfaſtly upon them, and, in all probability, he will ſee the ſingular ſpectacle of his own ſhadow extending to the length of five or ſix hundred feet, at the diſtance of about two miles before him. This is one of the moſt agreeable phenomena I ever had an opportunity of remarking on the great obſervatory of Germany."

TRAVELS OF C. OLIVER AND C. BRUGUIERE, UNDERTAKEN BY ORDER OF THE FRENCH GOVERNMENT, THROUGH THE OTTOMAN EMPIRE, EGYPT, AND PERSIA, DURING THE YEARS 1792, 93, 94, 95, 96, and 97.

IN the year 1792 the provisional executive council, sensible of the advantages which might result to commerce, agriculture, natural history, geography, medicine, &c. by a tour through the Ottoman empire, Egypt, and Persia; persuaded that these interesting countries had never been considered under a proper point of view, or had been considered only partially, and that we had still much to learn respecting them; made choice of C. Bruguiere and myself to accomplish that object.

After some delays, we at length sailed from Marseilles, in April 1793, in a neutral vessel, and, without touching any where by the way, arrived at Constantinople, after a pleasant voyage, on the 21st of May.

It would be difficult to express the different sensations excited in the traveller by the first view of that large city and its inhabitants. The mixture of trees, houses, and minarets; the canal of the Black Sea, the hills and valleys by which it is bordered, Scutari and the numberless villages situated on its shores, the sea of Marmora with its islands, Mount Olympus covered with snow, the variegated and fertile fields of Asia and Europe, all together present so many pictures which at once delight and astonish. One cannot help admiring the natural beauty of the environs of Constantinople, and reflecting at the same time on the happy situation of that large city, which can be so speedily supplied with provisions; which is so easy to be defended, and which enjoys the advantage of a port so safe, so commodious, and of such an extent. But, if we cast our eyes a little farther, we behold the two shores of the entrance into the Black Sea, for the space of several leagues, convulsed by subterranean fires. Different strata of lava, decomposed rocks, prophyry and granites of various colours, more or less altered, attest the flow and successive action of a great volcano. If we ascend a few leagues, we discover, for a vast extent, a mine of coal, which the Turks have not yet found means to work.

We remained six weeks in this capital of the Ottoman empire, waiting till the envoy extraordinary of the republic should receive from the minister orders respecting our mission and allowance; but the attention of government was at that time engaged with objects of more importance. Our letters remained unanswered, and we should have been thrown into great embarrassment had not our pressing wants been supplied by the envoy of the republic.

After viewing this country, so interesting in every respect, and making an ample collection of plants, birds, fishes, insects, shells, and minerals; and after sending two packages of seeds at different times to the national garden of plants, we set out for the Dardanelles, by which means we had it in our power either to proceed to the Archipelago in the spring, or to return to Constantinople in order to direct our course towards the southern shores of the Black Sea; to proceed through Armenia, Georgia, Ghilan, or Chirvan, to the borders of the Caspian sea; afterwards to traverse Persia from north to south,

and

and to return by the Perſian Gulph, Buſſora, Bagdad, Meſopotamia, and Aleppo. As we did not, however, hear from government, and could receive only part of our allowance, we confined ourſelves to excurſions to different places in the neighbourhood of the ſea of Marmora, the channel of the Dardanelles, Troade, Tenedos, Scio, ſome parts of the coaſt of Natolia, Mycone, and Naxia, from which we proceeded to Crete.

Agreeably to our inſtructions, we had tranſmitted to Conſtantinople, to be reared in the garden of the ambaſſador's palace, plants of a kind of apple-tree with oblong fruit of an excellent flavour, proper to be cultivated in any part of France, but more particularly in the ſouthern departments; plants of three kinds of oak not found in our foreſts or gardens—one kind proper for ſhip-building—another *à grand cupule*, known in commerce by the name of *avellonée*, which is the *quercus ægilops*; and laſtly, that which furniſhes the galls of the Levant: we added alſo ſeveral ſhrubs deſtined to enrich the national garden of plants.

Though ſeveral well-informed Europeans have traverſed this part of the Ottoman empire; though many of them have publiſhed intereſting obſervations on the political relations of the Turks, their manners, uſages, and religion; and though we have excellent works on the plants and ancient hiſtory of theſe countries; we, however, found that there is ſtill an abundant harveſt to be reaped, even in the beſt-known part of natural hiſtory, that is to ſay, in regard to plants. But when we reflect that the reptiles, river fiſh, inſects, and terreſtrial ſhells, in thoſe diſtricts, have not been obſerved by any traveller; that no one has made us acquainted with the riches which the Turks poſſeſs in mineralogy, mines of iron and copper, pozzolana, and coals at the very gates of the capital, marble of all kinds exceedingly abundant in the iſlands of the ſea of Marmora and the Archipelago, agates, cornelians, and chalcedonies in the fiſſures of the volcanic rocks, mines of allum and ſulphur, mineral waters of every kind; in a word, if we recollect that no traveller has conſidered this country in regard to geology, that part of natural hiſtory ſo intereſting, which by enabling us to obſerve the different ſtrata of earth and ſtones, the direction and ſtructure of mountains, and to compare the different foſſils that one meets with, muſt neceſſarily conduct to a certain knowledge of the antiquity of our globe, of the laws to which it is ſubject, and of the different cataſtrophes it has experienced, and of which ſome faint light has been tranſmitted to us by the fabulous hiſtory of antiquity, will be readily perſuaded that our obſervations, directed to theſe objects, cannot fail of being highly intereſting.

We remained four months at Candia; and, though two years had elapſed ſince our departure from Paris, we had received no intelligence from government. We were, therefore, of opinion, that it would be abſolutely neceſſary for us to renounce our firſt plans; but, as we were deſirous of employing our time in the moſt uſeful manner poſſible, we reſolved to proceed to Egypt, and to traverſe that country ſo abundant in ſubjects of obſervation, and as intereſting for the politician and ſtateſman, as for the philoſopher, naturaliſt, and antiquarian.

The ſituation of the French in Egypt was extremely diſagreeable: their commerce had been interrupted, and they were in a ſtate of oppreſſion

oppreſſion at Cairo. Some of them had been maltreated by the government, and the council of the republic enjoyed no conſideration. Our firſt care was to ſtudy the monſtrous government of the Mamelouks, their military force, and their manners; to make ourſelves acquainted with the revenues of Egypt, the preſent ſtate of its commerce, and that which it might be ſuſceptible of under a juſt and enlightened government. We examined the ports of Alexandria, the road of Abonkir, the Delta, the courſe of the Nile, its periodical inundation, the canals which the negligence of the Mamelouks has ſuffered to be filled up, the monuments reared to gratify the pride of kings, and thoſe which have been conſtructed in conſequence of religious duties. We directed our view, at the ſame time, to the natural productions of Egypt, and thoſe which might be introduced into it by cultivation; the fertility of its ſoil, and the diſeaſes to which the inhabitants are expoſed. We enquired into the cauſe of the periodical winds. In the laſt place we examined whether the plague, that malady ſo ſudden and ſo terrible in its effects, has its ſource in Egypt, as ſome travellers have aſſerted, or whether it be there only caſual and epidemic. Our harveſt, in regard to natural hiſtory, has been very abundant: we had an opportunity of tranſmitting to the national garden of plants a third box of ſeeds from the Archipelago, Candia, and Egypt.

On the 23d of March we received letters from the envoy extraordinary, by which he invited us to quit Egypt and to return to the ſhores of the Boſphorus; becauſe the time was at length arrived for carrying into effect the plans we had formed. "Regions lying farther to the eaſt," ſaid he, "now invite you, and I wiſh to confer with you before you proceed thither."

Under the ſame cover there were two letters of C. Desforgues, miniſter of foreign affairs. One was a copy of that which the miniſter wrote to C. Deſcorches; in which he requeſted from him an eſtimate of the ſums neceſſary to be expended, in order that we might properly diſcharge our miſſion. He authoriſed him to ſupply us with whatever ſums might be requiſite, to procure ſuch guides and information as the nature of our miſſion required, and to obtain thoſe documents which were indiſpenſibly neceſſary for our reſearches and obſervations. He concluded his letter with the following words: In all caſes theſe two obſervers of nature will be ſubordinate to your commands; they will give you an account of all their operations, and at the end of each month you will tranſmit to me the reſult of their obſervations on the arts, ſciences, natural hiſtory, commerce, and political ſtate of the countries through which they paſs, in order that I may give a faithful repreſentation to the executive council, of their zeal, their labours, and their diſcoveries." —In the other, the miniſter informed us, that he had requeſted C. Deſcorches to give him an account of the ordinary expences to which we ſhould be ſubjected. He concluded by deſiring us to tranſmit our ſubmiſſion in writing to C. Deſcorches, and to conform to the diſpoſitions contained in the letter which he had addreſſed to him.

We embraced the earlieſt opportunity of complying, both with the orders of the miniſter, and thoſe of the envoy. We tranſmitted our ſubmiſſion; and, having terminated our obſervations on Cairo and the neighbourhood, repaired, without delay, to Alexandria. We ſailed from that port on the 30th of April, and arrived at Conſtantinople

ſtantinople after a navigation of forty-eight days. We had the pleaſure of touching at the iſles of Rhodes and Lero, which we had not before ſeen. The repairing of a leak in our veſſel obliged us to remain eight days at the former; and we were detained as long at the latter on account of the north winds.

During this interval C. Deſcorches had been ſucceeded by C. Verniac. We therefore delivered to the latter a ſketch of our operations, from the period of our arrival in the Levant; a ſtatement of the ſums we had received; and a minute memoir on the ſituation of the French in Egypt, the government of the Mamelouks, the productions and revenue of the country, the cultivation of the land, on its commerce, and laſtly on the improvements of which the country was ſuſceptible. This memoir concluded with reflections excited by the order which C. Deſcorches had given to the conſul and French at Cairo, to repair proviſionally to Alexandria, and put themſelves under the protection of the port captain of the Grand Signior; and to wait there until more favourable circumſtances ſhould enable the conſul to reſume his functions at Cairo, and the merchants their commercial operations. We forwarded to the national garden of plants a fourth box of the ſeeds from Egypt, Rhodes, Lero, and the ſhores of the channel of the Dardanelles, as well as a live ichneumon which we had reared for four or five months.

Perſia, a prey to the horrors of civil war ſince the reigns of the latter ſophis (the family of the Sephevi), gave reaſon to hope for a flouriſhing kingdom under a monarch who had triumphed over all his rivals, and had deſtroyed each of them in ſucceſſion. The opportunity was then favourable for travelling into the interior parts of this country, ſo intereſting in every point of view. C. Verniac allowed us the whole of our appointment, authoriſed us to engage a dragoman, gave us a letter to the chief miniſter of the king of Perſia, another to the pacha of Bagdad, and, at the ſame time, various inſtructions both verbally and in writing.

At the moment of our departure, the Porte had a deſign of conſtructing in the harbour of Conſtantinople a baſon after the model of that of Toulon; and ſome Armenian merchants wiſhed to prevail on us to communicate to them a diſcovery we had made of an excellent kind of pozzolana, by offering us the ſum of 30,000 piaſtres. As we were here under the orders of the republic, we did not think ourſelves at liberty to enter into any treaty with Armenians, in regard to our diſcoveries, until we had appriſed the envoy of the republic. C. Verniac, who intended to get this baſon conſtructed by French engineers, deſired us to reject the offers of the Armenians, promiſing to procure us a more ample recompenſe from the Porte; and he immediately ſent the firſt dragoman of the legation to the Turkiſh government, to communicate our diſcovery, and make an offer of our ſervices. The Porte ſeemed to accept this offer with gratitude; and, having requeſted a note on the ſubject, we embraced the earlieſt opportunity of tranſmitting to it a memoir, in which we ſaid that we had diſcovered pozzolana of an inferior quality near the channel of the Black Sea, in Prince's iſlands, and various iſlands of the Achipelago; and ſome of a ſuperior quality, or at leaſt equal to that of Italy, in the iſland of Santorin. The memoir concluded with a few details reſpecting the method of employing both.

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The miniſters of the Porte, when they received this memoir, informed the dragoman, that the Armenians had demanded for the diſcovery 60,000 piaſtres, though they had offered us only 30,000. They added, that they would never forget the ſervice which we rendered to them, and that their gratitude would be boundleſs if we could effect what we promiſed. On this ſubject we had two interviews with the Chelebi-Effendi; and that miniſter twice gave us reaſon to hope that the Porte would reward, in a manner worthy of itſelf, the important diſcovery we had communicated.

In the mean time we were juſt on the point of proceeding on our journey to Perſia. The neceſſary preparations were already made, and we were looking out for a caravan going to Diarbekir, when the Porte required that we ſhould repair to the iſles of Santorin, Milo, and Argentiera, and tranſmit to it ſome bags of pozzolana, in order that previous experiments might be made. For this purpoſe it freighted a French veſſel, and ſent a chiaous to accompany us and bring back the ſpecimens. We were obliged to touch at Metelin to receive from the captain pacha, then lying at anchor before that iſland, the neceſſary firmans.

The inhabitants of Santorin, alarmed at this diſcovery, and fearing that the Ottoman government would cauſe the earth to be dug up at their expence, and of courſe ſend Turkiſh officers into the iſland, immediately aſſembled to execute the Grand Signior's orders, and to deviſe means for warding off the blow with which they were threatened. They thought they could do nothing better than to ſend the primates to the Latin biſhop at whoſe houſe we lodged, and to offer us a preſent if we would inform the Porte that we had diſcovered none of the above ſubſtance in the iſland. We, however, rejected the offer of theſe primates, and tranſmitted to Conſtantinople ſeveral bags filled with pozzolana of an excellent quality, which was in great abundance, and exceedingly eaſy to be dug up. We depended on C. Verniac for the promiſed recompence to which we thought ourſelves entitled by the importance of the diſcovery, by rejecting the offers of the Armenians, and the trouble, dangers, and delay, we had experienced.

The iſland of Metelin, almoſt entirely volcanic, is remarkable on account of its great fertility, its immenſe ports, and its warm mineral ſprings. Argentiera, known formerly under the name of Cimolus, is entirely volcanic. We remarked, with pleaſure, that the Cimolean earth, which it furniſhes in abundance, is produced by a ſlow and gradual decompoſition of the porphyries occaſioned by ſubterranean fires. I collected ſpecimens of that earth in all the ſtates through which it paſſes. This obſervation will be intereſting, no doubt, to mineralogiſts, and make them acquainted with the origin of a ſubſtance hitherto little known. The iſland of Milo is altogether volcanic. It preſents a vaſt port, on the borders of which is a ſpring of warm aluminous water; a very warm grotto, where feather alum is formed; a volcano ſtill burning, and a prodigious quantity of catacombs. The iſland of Santorin is remarkable for the changes effected in it by a volcano, and the ſinking down of a great part of the iſland; from which has reſulted a kind of port, more than two leagues in extent, and from the bottom of which three iſles have been thrown up at different known periods. The rupture occaſioned by the almoſt circular ſinking down of the iſland exhibits

different ſtrata of volcanic ſubſtances, among which we obſerved ſeveral kinds of pozzolana. That which we ſent to Conſtantinople, and of which I have ſpecimens, may one day ſerve for ſuch maritime conſtructions as the French may think proper to make in Egypt, when they are once firmly eſtabliſhed in that country.

We touched a ſecond time at Rhodes, proceeded thence to Baruth, and afterwards to Sayd, with a view of going to Damaſcus to take advantage of the departure of a caravan for Bagdad, as we had been taught to expect; but, the caravan having departed a long time before, we were obliged to return and take the route to Aleppo. We were unwilling to quit the coaſt of Syria without paying at Tyre a tribute of admiration to which that city was ſo juſtly entitled.

As the road from Latakia to Aleppo is never ſafe, we waited ſome days for the departure of a caravan. During that time we tranſmitted to the national garden of plants a fifth box of ſeeds, from the iſlands we had viſited, and the coaſts of Syria. On our arrival at Aleppo we employed ourſelves in examining the ſituation of the French in that city. We collected information reſpecting the commerce carried on by the Europeans with the inhabitants, and ſent to C. Verniac a memoir on that ſubject. We alſo made various obſervations in regard to natural hiſtory and geology. We procured ſeveral birds, and a few quadrupeds: after which we ſet out, towards the end of winter, in company with a caravan; and, paſſing through Orfa, Merdin, Neſbin, and Moſul, arrived at Bagdad without any accident.

This journey was extremely intereſting; for, beſides the great number of objects which we collected, and the obſervations we had occaſion to make, we were ſurpriſed to ſee a country exceedingly fertile, yet almoſt a deſert, and often volcanic, exhibiting, at every ſtep, veſtiges of ancient cities. We croſſed the Euphrates and the Tigris on wretched wooden boats; and two rivers, which flow from the mountains of Curdiſtan, on boats formed of a number of inflated ſkins joined together. I ſhall deſcribe, with ſome minuteneſs, this ſimple method of croſſing rivers, becauſe it might be employed with advantage in Europe, on account of the facility and trifling expence of tranſporting a great number of ſkins; of inflating them in a moment, and uniting them firmly together by means of the branches of trees; and of conveying, in this manner, over the largeſt rivers, a whole army without any danger.

When we arrived at Bagdad, the pacha was ſo ill that two Perſian phyſicians, who attended him, had given over all hopes of his recovery. His aſtrologer had read in the ſtars the fatal ſentence; the kiaya pacha and ſome of the grandees were already forming intrigues to ſucceed him, and the janiſſaries were taking up arms to ſell their ſervices to the higheſt bidder. The Arabs of the deſert, and of Meſopotamia, waited only for the moment of his death to plunder the caravans and rob travellers. This city was threatened with a general inſurrection. Commerce was ſuſpended; and it was impoſſible for us to continue our journey. The pacha begged us to give him our advice, until we ſhould have an opportunity of ſetting out for Perſia. We thought ourſelves bound to comply with his requeſt, and had the ſatisfaction to reſtore him to health in the courſe of a few days. From that moment order was every where re-eſtabliſhed; and the kiaya alone paid, with his head, for the ſteps he had

had taken to aſſume the place of his benefactor. The pacha ſhewed us every mark of gratitude, made us a preſent of two fine Arabian horſes, and gave us letters of recommendation to the khan of Kermancha, and the miniſters of the King of Perſia.

We did not delay a moment to provide ourſelves with Perſian dreſſes, and whatever elſe was neceſſary; and departed on the 16th of May 1796, with the regret of leaving behind us a box containing ſeveral very valuable jewels, deſtined as preſents to the Perſian court, which the envoy of the republic at Conſtantinople was to have ſent after us.

The uſual heat at Bagdad, during ſome hours of the day, is from 110° to 113° Fahr. On the day of our departure the thermometer was already at 99½° Fahr. We had here an opportunity of ſeeing a phenomenon which explains the origin and cauſe of that ſingular and tranſitory wind which deſtroys men and animals, if proper precautions are not taken to guard againſt its effects.

On our arrival at Kermancha, the firſt city of Perſia, we waited on the khan, made him acquainted with the object of our travels, and delivered to him the letter from the pacha of Bagdad. The khan aſked us many queſtions reſpecting the different ſtates of Europe, with which he ſeemed to be little acquainted, and reſpecting our manners and cuſtoms. He dwelt moſt on the countries of the Ottoman empire which we had traverſed, and particularly Bagdad, becauſe in that city the aſhes of Ali are preſerved. He gave orders to one of his officers to accompany us to court, and procured us the neceſſary paſſports. On the 1ſt of June we arrived at Teheran, where we learned that the king and his miniſters had ſet out in the beginning of ſpring on an expedition, the object of which was ſuppoſed to be the conqueſt of all Chorazan.

I was highly pleaſed with the idea of undertaking this journey, and I conſidered it as a fortunate circumſtance that the king was at the head of an army in one of the moſt intereſting provinces of Perſia; into which no European traveller had penetrated, and which produces the moſt remarkable plants, as well as the greater part of the drugs brought to us from the eaſtern countries; but C. Bruguiere had been ill for a long time, and was threatened with a dyſentery. The dragoman himſelf was indiſpoſed, and reaſons were not wanting to diſſuade me from undertaking the journey. "It is not poſitively known," ſaid ſome, "where the king is; and it is dangerous to approach the army in this country, becauſe people are plundered, and even killed, before they can be known and protected. It will require more than a month to reach Chorazan, and the king muſt return in two." Theſe reaſons did not counterbalance the advantages which were likely to reſult, from this journey, to natural hiſtory and geography; but I reflected that the health of my colleague was becoming daily worſe, and that he was incapable of ſupporting the fatigues of travelling ſo far, during the hotteſt ſeaſon of the year. It would have been neceſſary to traverſe the Mazandaran, a hot, marſhy, and extremely unhealthful, diſtrict; and beſides this, the dragoman refuſed to accompany us. We then agreed to wait for the king in the environs of Teheran, in order that we might take advantage of the ſeaſon proper for reſearches in regard to natural hiſtory; for collecting ſeeds, and for enabling C. Bruguiere to re-eſtabliſh his health with more facility.

We were obliged to negotiate, and to make ſome pecuniary ſacrifices, before we could obtain permiſſion to quit the town, and reſide in a village at the bottom of mount Albours. Teheran contained hoſtages from all the great cities of the empire, whom Mehemet had cauſed to aſſemble there for his ſecurity; ſo that people might enter the city, but could not depart from it without the expreſs leave of the governor; and the latter did not let ſlip ſo fine an opportunity of forcing us to expend a little money. As we foreſaw that the preſents left behind might be retarded, and not even reach us, we thought it prudent not to make any mention of them. We had it in our power, indeed, to offer the governor a watch and ſome arms; but we ſhould thus have entered into an engagement to give other preſents to his principal officers, and, on the king's arrival, having nothing ſufficiently beautiful to offer to his miniſters, and our preſents being detained at Bagdad under a pretence that the roads were not ſafe, we ſhould have been conſidered as impoſtors, and ſhould have loſt that confidence which our conduct ought to have inſpired.

The king, after taking poſſeſſion of Meſched and all Chorazan, and after having deſtroyed Charok-Shah the laſt deſcendant of Thamas-Kouli-Khan, and carried away his treaſures, returned to Teheran. He made his entry into that new capital towards the end of September 1796; and, two days after, we had an audience of the prime miniſter, with whom we had reaſon to be ſatisfied. We endeavoured to ſecure the friendſhip of the chief ſecretary, an active, judicious, enterpriſing, man, and as well-informed as could be expected in Perſia. We ſpoke to him of the new government eſtabliſhed in France; and, at the ſame time, made him acquainted with its reſources, population, triumphs, and power. We received from him ſome intereſting details reſpecting the manners, religion, and government, of the Perſians, as well as a circumſtantial hiſtory of the troubles which had deſolated that unhappy country ſince the dethronement of Shah Huſſein, and particularly ſince the death of Nadir Shah. On the 4th of October we obtained from the miniſter an audience to take leave; and, ſome days after, his principal ſecretary gave us a letter addreſſed to the French republic, a copy of which I immediately diſpatched, reſerving the original, which I have ſince preſented to the directory.

We now made haſte to complete our obſervations and to return to to Bagdad, as we already foreſaw the ſtorm which ſtill involves that country in all the horrors of a civil war. We quitted Teheran on the 15th of October, and purſued the road to Iſpahan. We had made an ample collection of objects of natural hiſtory, and of medals. We had acquired alſo very correct information reſpecting the population, revenues, and forces, of Perſia; the late revolution, and the ſtate of its commerce. Our travels, however, would have been incomplete, had we not ſeen the ancient capital of the empire, and the ſeat of the ſophis. We remained a month at Iſpahan, and on the 21ſt of December arrived at Bagdad.

Some European travellers have traverſed Perſia, and have given us accounts more or leſs correct of that empire. They have made us acquainted with the induſtry and commerce of the Perſians; given us long details reſpecting the religion and followers of Mahomet; and have deſcribed the palace and gardens of Shah Abbas and his ſucceſſors, as well as the public edifices of Iſpahan. But the hiſtory

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of the troubles of Perſia ſince the death of Nadir Shah; the changes in manners, agriculture, and induſtry, which muſt have been effected there by inteſtine wars, that continued for more than ſixty years; the formation of a new empire, more powerful than Perſia itſelf, which extends from Candahar to Cathmire, from Caboul to the country of the Moguls, comprehending the fertile banks of the Indus; cannot fail of giving new intereſt to a new narration. In regard to natural productions, it will be ſeen, by an account of the different objects which I ſhall not fail ſoon to publiſh, how little they are known, and how curious and important the greater part of them are.

Perſia is an elevated country, covered with ſnow in winter from the Caſpian ſea to Iſpahan; and, in ſummer, dry and exceedingly warm. It conſiſts of mountains remarkably high, and of immenſe plains, for the moſt part uncultivated. What muſt aſtoniſh every traveller is, that throughout the whole empire no production can be obtained without watering: neither corn nor vines grow there but by means of water. No trees or ſhrubs are ever ſeen, but ſuch as have been planted, reared, and watered, by the hand of man. Water is every where neceſſary; and yet in this country it is naturally wanting. It was requiſite, therefore, that the induſtry of the inhabitants ſhould ſupply this deficiency by ſubterranean channels, which convey water from all quarters, and end at a common reſervoir. By taking advantage of the declivity of the ground, they then draw off different ſtreams, near which they form habitations more or leſs conſiderable, according as the water, more or leſs abundant, admits of a greater or leſs degree of cultivation.

Though wounded, at the diſtance of ſix days journey from Bagdad, by a band of Curdes, while aſſiſting my colleague when about to fall into their hands, I was, however, ſoon able to continue our journey; but C. Bruguiere, whoſe life was almoſt daily threatened in Perſia, and whoſe health was ſtill uncertain, could not for a long time be prevailed on to proceed. Nearly ſix months elapſed before I was able to perſuade him to ſet out in order to return home. Several times, on the approach of the fine ſeaſon, did I threaten to leave him; but I could never reſolve to do ſo, as my conſcience would not have ceaſed to reproach me, had my companion, after my departure, terminated his career at a diſtance from his friend and fellow-traveller.

During the time I reſided at Bagdad waiting for the perfect reeſtabliſhment of C. Bruguiere's health, I employed myſelf in collecting different materials for a hiſtory of our travels. I have ſeen the ruins of Seleucia, Cteſiphon, the ſite formerly occupied by the celebrated Babylon; the towers called thoſe of Nimrod, which neither time nor the hand of man has been able entirely to deſtroy, and which ſtill excite the admiration of travellers.

I had in Egypt and Syria obſerved the Arabs, that nation ſo ſingular, and reſpecting whom travellers have ſpoken ſo differently. I had ſtudied their manners, their cuſtoms, and the form of their government. It ſtill remained for me to live among them, to travel with them, to frequent their tents, and to receive from their hands ſimple, frugal, and wholeſome, food.

As particular circumſtances obliged me at Bagdad to exerciſe the functions of a phyſician, I readily embraced that opportunity of ſeeing the interior part of the Mahometan habitations, and of becoming

coming acquainted with the ſtate of their harems, and the women ſhut up in them. No traveller, perhaps, had been able to collect, in this reſpect, ſo many ſingular anecdotes.

We departed from Bagdad on the 1ſt of May 1797, in company with a caravan deſtined for Aleppo. We remained ſixty-five days on the banks of the Euphrates, and in the deſert employed our time in preparing plants, collecting inſects, ſkinning birds and quadrupeds, and in making obſervations on the Arabs; the climate, ſoil, and productions, of theſe countries. We made only a ſhort ſtay at Aleppo, where we found a letter from C. Aubert Dubayet, in which, after ſome compliments on account of our conduct, he requeſted we would return by the ſhorteſt route to France.

This invitation was perfectly agreeable to our wiſhes; but it was indiſpenſably neceſſary that we ſhould paſs through Conſtantinople. Could we leave behind us a ſcattered collection, the fruit of five years labour and obſervations, expoſed to the dangers of the ſea and of dilapidation? Is it not certain that objects of natural hiſtory, almoſt all of a periſhable nature, muſt be taken care of during quarantines by hands accuſtomed to manage them? How eaſily might manuſcripts have been carried away? We had left ſome boxes under the care of a merchant at Conſtantinople, and others in an apartment of the ambaſſador's palace. There was a great number at Scio, and ſome at Latakia. We conſidered it as our duty to unite the whole, and to convey them all to Paris ourſelves, in order that it might be ſeen, on our arrival, whether we had accompliſhed the views of government, and whether we had not deceived the expectations of the learned.

We wrote to the ambaſſador to make him acquainted with the motives which induced us to take the way of Conſtantinople. We wrote, at the ſame time, to the conſuls of Tripoli and Cyprus, begging them to inform us when the firſt ſhip ſailed for the Archipelago; after which we repaired to Latakia, where we found only a wretched Venetian ſhip, in which the conſul adviſed us not to embark, as the Algerines, for ſome time paſt, had inſulted the flag of that expiring republic. We then reſolved to proceed to Cyprus, and to traverſe that iſland, though in the moſt dangerous ſeaſon; to repair afterwards to the coaſt of Caramania, and to proceed thence to Conſtantinople by croſſing Aſia Minor. This journey was one of the moſt intereſting we undertook, both in regard to natural hiſtory and the information we collected reſpecting the manners of the Turks, in a country little known, little frequented, and yet ſo worthy of attention.

We arrived at Conſtantinople in the end of October, and ſhould have departed thence in the Serieuſe, ſome time after had we received our boxes from Scio, and thoſe we left at Cyprus. The ambaſſador was employed in procuring us a paſſage in the Brune to Athens and Corfu, juſt at the time of his death. After that event, all our efforts to procure a ſafe and direct paſſage to France being uſeleſs, we thought we ſhould be ſheltered from all danger, and free from all reproach, if we proceeded to our iſles in the Levant, by croſſing the iſthmus of Corinth. It was certainly of much importance for us not to fall into the hands of the Engliſh, whoſe ſhips covered the Mediterranean. It would have given us great pain to ſee our enemies profit by our labours, and reap the fruit of all our dangers and fatigues.

We

We wrote to C. Carra Saint Cyr, *chargé d'affaires* of the republic at the Ottoman Porte, to inform him of our plan, and obtain his approbation; and at the same time to ask some pecuniary assistance, and make him adjust the statement of the sums advanced to us since our arrival in the Levant. We received a favourable answer, and such as was suited to our circumstances.

It may not be superfluous here to observe, that we had for a long time reminded the Porte of the services we had rendered to it in regard to the pozzolana; a service it perhaps thought it had sufficiently rewarded by the flattering letter which the Reis Effendi charged us to deliver to the minister of foreign affairs, accompanied with a present of 2000 piastres. We should certainly have refused, from any other government, a sum so small and so ill proportioned to our labour, expences, and the importance of the discovery, and, in particular, so far below the promises made to us; but a government so little susceptible of honest and generous conduct, would not have been sensible of the motive of our refusal.

We left Constantinople with a favourable wind on the 30th of April, in a Turkish boat we had hired; touched at one of the castles of the Dardanelles, and different points of the Troade, and, for the second time, traversed that fertile country. We paid a visit to the ancient site of Troy; saw the sources of the Scamander; went along the shores of the Simois, and thence proceeded to examine the ruins of the Troy of Alexander. We stopped half a day at Ipsera; went on-shore at Cape Sunium to see the remains of the temple of Minerva, and arrived at Athens on the 6th of May. We did not remain above twenty days in that city, which exhibits so many beautiful monuments, and calls to remembrance such great events. I have brought with me a plan of the ancient and modern city, by Fauval; and one of Marathon, which I traced out on the spot. I collected information respecting the present state of Athens and the neighbouring country, to compare it with what it was formerly. I have seen Mount Hymettus, the marble quarries of Pentelica, the cities of Elensis and Megara. We passed through the Straits of Salamis, where the Persian fleets were destroyed; and traversed the Isthmus to embark again on the Gulph of Lepanto, from which we repaired to Patras.

It was time to terminate our observations on the Ottoman empire, and to quit these countries, now barbarous, though formerly the seat of the arts, sciences, and philosophy. It was time to place ourselves under the ægis of the republic. We arrived at Corfu on the 14th of July, after having touched at Cephalonia, Ithaca, and Parga. We performed quarantine for twenty-one days. It was not yet finished, and we began to think of continuing our journey through Italy, though embarrassed with a considerable collection, when C. Comeyras, commissary-general of the directory, arrived. We immediately applied to him in order to procure a passage to Ancona. He gave us reason to hope that he would soon assign to us for that purpose a small vessel belonging to the republic; and, in the mean time, I traversed the island and environs, sometimes alone and sometimes with my colleague, to procure information respecting the natural productions of the country; the state of agriculture, and the improvements that might be made in it; its ports and harbours; the timber of Epirus fit for ship-building; the commerce of these districts, and the manners and opinions of our new French subjects.

On

On the 23d of Auguſt, and 6th of September, I delivered to C. Comeyras two memoirs, the one being a continuation of the other, in order that he might tranſmit them to government.

On the 9th of September we ſailed in the Brune frigate for Butrento, where we ſpent the day, and arrived at Ancona in the courſe of a few days. My colleague, who had been almoſt always indiſpoſed and in a ſtate of ſuffering ſince our tour through Perſia, here terminated his career, on the 3d of October 1798, in conſequence of a malignant fever brought on by fatigue. He has left a family in want, whom I doubtleſs have no need of recommending to the benevolence and juſtice of the government.

I have brought with me, from the countries I have travelled through, a pretty large collection of plants, ſeeds, quadrupeds, birds, reptiles, river-fiſh, inſects, ſhells, and minerals, as well as of medals, engraved ſtones, and other objects of antiquity. I have Egyptian idols and mummies; a ſelection of drugs, moſt of them unknown in Europe; a ſeries of the medicines employed in Perſia; and, in the laſt place, ſome rare and valuable manuſcripts. I have juſt ſent to the national garden of plants, ſeeds from Perſia, Meſopotamia, the deſert of Arabia, Syria, Cyprus, Aſia Minor, and Greece, in order to be there ſown and cultivated. A great number of thoſe which we ſent home before, have been already reared, and are in a thriving condition.

COW-KEEPING IN SWITZERLAND.

PASTURAGE being the principal employment in the interior part of the Canton of Appenzell, in Switzerland, whatever reſpects the breeding of the cattle, the management of dairies, and the making of cheeſe, is carried to a high degree of perfection among theſe mountaineers, who preſent us with the portrait of a truly paſtoral nation. Here both the rich and poor are cow-keepers; though many of the latter do not grow ſo much hay themſelves as they require for their cattle during the winter ſeaſon, or have no graſs lands at all. To ſupply this deficiency, they employ agents throughout the canton, who are to inform them where good hay may be obtained, which farmers made it in favourable weather, and then the Senn, or the great cow-keeper, who is in want of fodder, makes his agreements for the winter with wealthier farmers, to whom he ſucceſſively drives his cattle as ſoon as they return from graſs. Thus the itinerant Senn, with his cows, often viſits five different places during the winter ſeaſon. He who ſells the hay, furniſhes the Senn not only with ſtabling for his beaſts, but boards and lodges him as well as his whole family. In return, the Senn, beſides paying the ſtipulated price for the hay, allows to his hoſt as much milk, whey, and zieger (a kind of lean cheeſe), as may be uſed in the houſe, and leaves him alſo the manure of his cows. In the middle of April, when nature revives, the Senn again iſſues forth with his herd to the meadows and fertile Alps, which he rents for the ſummer. Thus the life of theſe men is a conſtant migration, affording them the moſt pleaſing variety, and bleſſing them with health, content, and cheerfulneſs.

The mountaineer lives with his cow in a conſtant exchange of reciprocal acts of gratitude; the latter affording him almoſt whatever

he wants; and the Senn, in return, providing for and cheriſhing them ſometimes more than his own children. He never ill-treats his cattle, nor makes uſe of a ſtick or whip: a perfect cordiality ſeems to prevail between both; and the voice of the keeper is ſufficient to guide and govern the whole herd. The cow, in the Canton of Appenzell, enjoys more of that regard which is due to every uſeful creature, and is altogether more comfortable, than millions of human beings in Europe, who, placed under the influence of the cudgel and the knout, have too much reaſon to curſe their exiſtence.

Fine cattle are the pride of the cow-keeper who inhabits the Alps; but, not ſatisfied with their natural beauty, he will likewiſe pleaſe his vanity. He adorns his beſt cows with large bells, ſuſpended from broad thongs; and the expence in ſuch bells is carried even to a luxurious exceſs. Every Senn has an harmonious ſet of at leaſt two or three bells, chiming in with the famous *ranz des vaches*. The inhabitants of the Tyrol bring a number of ſuch bells, of all ſizes, to every fair kept in the Canton of Appenzell. They are fixed to a broad ſtrap, neatly pinked, cut out, and embroidered; which is faſtened round the cow's neck by means of a large buckle. A bell of the largeſt ſize meaſures upwards of a foot diameter, is of an uniform width at top, ſwells out in the middle, and tapers towards the end. It coſts from forty to fifty guilders, while the whole apparel of the Senn himſelf, when beſt attired, does not amount to the price of twenty guilders. The fineſt black cow is adorned with the largeſt bell, and thoſe next in appearance have two ſmaller.

Theſe ornaments, however, are not worn every day, but only on ſolemn occaſions, viz. when, in the ſpring, they are driven up the Alps, or removed from one paſture to another; or when they deſcend in the autumn, or travel in the winter to the different farms, where their owner has contracted for hay. On ſuch days the Senn, even in the depth of winter, appears dreſſed in a fine white ſhirt, of which the ſleeves are rolled up above the elbow; neatly embroidered red braces keep up his yellow linen trowſers, which reach down to his ſhoes; a ſmall leather cap or hat covers his head; and a new milk-bowl of wood, ſkilfully carved, hangs acroſs his ſhoulder. Thus arrayed, the Senn precedes, ſinging the *ranz des vaches*, and followed by three or four fine goats; next comes the handſomeſt cow with the great bell; then the two other cows with ſmaller bells, and theſe are ſucceeded by the reſt of the cattle, walking one after another, and having in their rear the bull, with a one-legged ſtool hanging on his horns; the proceſſion is cloſed by a *traineau*, or ſledge, on which are placed the implements for the dairy. It is ſurpriſing to ſee how proud and pleaſed the cows ſtalk forth when ornamented with their bells. Who would imagine, that even theſe animals are ſenſible of their rank, nay touched with vanity and jealouſy! If the leading cow, who hitherto bore the largeſt bell, be deprived of her honours, ſhe plainly manifeſts her grief at the diſgrace by lowing inceſſantly, abſtaining from food, and growing lean. The happy rival, on whom the diſtinguiſhed badge of ſuperiority has devolved, experiences her marked vengeance, and is butted, wounded, and perſecuted, by her, in the moſt furious manner; until the former either recovers her bell, or is entirely removed from the herd. However ſingular this phenomenon may appear, it is placed beyond all doubt by the concurring teſtimony of centuries.

The cows, when diſperſed on the Alps, are brought together by the voice of the Senn, who is then ſaid to *allure* them (*lecken*). How well the cattle diſtinguiſh the note of their keeper, appears from the circumſtance of their haſtening to him, though at a great diſtance, whenever he begins to hum the *ranz des vaches*. He furniſhes that cow, which is wont to ſtray fartheſt, with a ſmall bell, and knows by her arrival that the reſt are aſſembled.

SCIENCE AND LITERATURE, FOR JULY 1799.

THE following letter relative to the late paſſage of Mercury over the Sun, has been addreſſed by Lalande, the aſtronomer, to the editor of one of the Paris journals:—"I waited impatiently to mark the paſſage of Mercury over the Sun, in his deſcending node; he had never been obſerved completely in that poſition, and it will be thirty-three years from hence ere it can be done again. I had the pleaſure to ſee Mercury enter on the Sun like a ſmall, black, round, ſpot, on the 18th of Floreal in the morning, at the very minute indicated in the new tables, the ground-work of which I gave in the firſt memoir, read at the firſt aſſembly of the firſt claſs of the inſtitute, on the very day of its eſtabliſhment. This is ſo much the more ſatisfactory, as for the paſſage of the 4th of May, 1786, there was 40 minutes of error in the beſt tables of Mercury."

Mich. Szekely de Biborcyfalva, inſpector of the mines to Count Schænborn, at St. Niklas, near Minkaſh, in Hungary, has fabricated of the Aſclepias Vincetoxicum a ſort of cloth mixed with ſilk. He has preſented a pattern of ſix ells and three quarters in length to the government eſtabliſhed at Buda. This cloth, the firſt fabrication of which coſt nine francs, but which, according to the calculations of the inventor, will not amount in the ſequel to above four francs, is two ells in width and pretty fine. It appears, however, that this is not the firſt eſſay that has been made to convert the down of the aſclepias to economical purpoſes; but hitherto the experiments have been only of ſimple curioſity, and not practiſed on a large ſcale.

Citizen C. P. Laſtetrie, member of the Philomathic Society, and of that of Agriculture, at Paris, in a Treatiſe on Spaniſh Sheep, &c. lately publiſhed, has proved by a number of inconteſtible facts, that the fine wool with which Spain alone has ſo long furniſhed the reſt of Europe, is not owing to the phyſical ſituation of that country, but to the apathy of other nations, and to certain prejudices which originate only in ignorance. He has ſatisfactorily demonſtrated the poſſibility of obtaining, not only in France, but in the other countries of Europe, wool as fine as that in Spain itſelf; and for this purpoſe endeavours to impreſs upon agricultors, the neceſſity of changing the vicious regimen to which ſheep are at preſent ſubjected, and to inſpire them with an emulation to ameliorate their flocks, &c. It is certain that Spain has not been always renowned for its wool, and that its preſent moſt excellent breed of ſheep has been introduced there from foreign countries.

A work has been lately publiſhed at Paris, entitled "The Correſpondence of Voltaire, and of Cardinal de Bernis, from 1761 to 1777, as copied from the original letters, with notes, &c."—The editor is Citizen Borgoing, *ci-devant* miniſter of the republic at Madrid, and now aſſociate member of the national inſtitute. The authenticity of the

the letters cannot be conteſted, as the manuſcripts are in poſſeſſion of the Chevalier Azara, ambaſſador of Spain to the French republic, who, it appears, was the friend and teſtamentary executor of the cardinal. In fact, the reader will eaſily diſcern in them the impreſs of the well-known character of Bernis, as well as Voltaire's turn of wit, in the epiſtolary kind. Of ninety letters in this collection, two only have been printed before, in the *Correſpondance generale de Voltaire*, and theſe are now printed again to preſerve the correſpondence of theſe two celebrated men entire. The Cardinal de Bernis was a brilliant poet, and poſſeſſed (as theſe letters ſhew) wit, talents, a critical judgment, a fine taſte, and a high degree of ſound claſſical literature: in fine, he was a man of letters worthy of a better age. The cardinal died at Rome in 1794, that is to ſay, about 16 years after Voltaire. He had reſided in that city ſince 1769, under the character of miniſter to the king at the court of Rome, and protector of the churches of France. Previous to this, he had been ambaſſador at Venice, miniſter of foreign affairs, diſgraced according to cuſtom, then exiled, afterwards recalled, and made archbiſhop of Albano. By the French revolution he was deprived of all his eccleſiaſtical revenues in France, and reduced to his archbiſhopric of Albano in Italy, the income of which was ſo moderate, that he accepted a penſion from the court of Spain, granted at the requeſt of the Chevalier Azara.

Profeſſor Fuſch lately read to the academy of uſeful ſciences, of Erfurt, a treatiſe on the compoſition of a varniſh for pottery ware, in which no lead enters. The diſcovery of this varniſh, which combines all the requiſite qualities, is the fruit of a long ſeries of experiments. It is thus prepared: Let there be melted, and kept in fuſion for a quarter of an hour, a mixture of an ounce of fire-ſtone, an ounce of pounded glaſs, two drachms of ſalt, half an ounce of tobacco-pipe earth, and an ounce and a half of borax. Let the pots be plaſtered over with this matter, after they have been already in the fire, and put them again in it for about ſeventeen or eighteen hours.

It appears from the Paris journals, that the ſkeleton of the famous cetaceous animal which was driven on-ſhore alive laſt year, on the coaſt of the iſles Marguerite (department of Var), is now exhibited in the *Cour des Fontaines* at Paris. A detailed deſcription has not hitherto been given of it by naturaliſts. It appears, however, that this animal belongs to a ſpecies of whale very rare, and unknown to ſuch of the Greenland and Norway fiſhers as have ſeen it at Paris. When alive, its body was twenty-two metres long, by more than fifteen diameter. It had no teeth; but on each ſide of the palate it had a very thin lamina of horn, diſpoſed one beſide another in a parallel ſituation. The eyes were about twice as big as thoſe of the ox, covered with hair and lids. On the ſummit of his head were two vent-holes formed as noſtrils, ſeparated from each other by a cartilaginous partition, and by means of which it threw up water at a prodigious height, with a hiſſing ſound like that of a cannon ball—nothing remarkable appeared in its voluminous ſtomach; it could not be diſſected accurately, as there was an immediate neceſſity to cut away and inter the fleſhy parts; the large maſs of fleſh exhaling an odour which might have become infections to the whole country.

That able and ſkilful naturaliſt, Frederick Humboldt, had lately quitted Paris, to paſs over to Algiers, in order to commence his

ſcientific travels in Africa. The object of the great journey which he had propoſed to make, was to paſs to Algiers, in the Swediſh frigate the Jaramas, to ſtudy Mount Atlas and the deſert called Saarah, to paſs over the deſert with the caravan which goes from Tripoli to Mecca, and at laſt to join the French naturaliſts in Egypt. Circumſtances, however, have prevented this deſign; the frigate ſuffered ſhipwreck in a port of Norway, and the Dey of Tripoli has prohibited the caravan from ſetting out. M. Humboldt, however, has not been deterred by theſe diſcouragements from his project of quitting Europe, and tranſporting himſelf, with all his inſtruments, into the Torrid Zone. He has repaired, therefore, to Spain, from whence he will paſs to Mexico, to Peru, to Chili, and to the Philippines. He is on the eve of ſetting out for the Havannah, from whence he will repair to Vera Cruz. The King of Spain wiſhed to have ſome diſcourſe with him, and has given all poſſible facilities for his voyage, which promiſes uſeful and important diſcoveries for the ſciences.

M. Danzel, a reſpectable mechanician, &c. of Hamburgh, has circulated in the German gazettes propoſals for making public, under certain conditions, a certain method of moving a veſſel forward, and making it obey the helm, in a time of calm, by a mechanical proceſs. This machine, which is ſimple in its compoſition and management, and of ſmall expence, it is ſaid, he has tried with ſucceſs, on-board the Alſter, even againſt an adverſe wind, and pretty freſh, at north-eaſt. It requires no other fluid to ſet it in motion than the water, which it does not quit, ſo long as it is at work; and it may be brought on ſhore without much trouble. It is moved by men who remain for that purpoſe in the veſſel. It is, in fact, an entirely new manner of hauling or towing a ſhip. This mechaniſm poſſeſſes divers other properties, not limited to a calm, nor to the water. He propoſes to the connoiſſeurs, to the admiralties, and to the commercial world at large, that expert perſons may be nominated, to judge by experiments of the utility of this invention; engaging to diſcloſe his proceſs at an equitable price, as a compenſation for the much trouble and long labours he has undergone to bring it to perfection.

It appears from the French journals, that the rare and precious plants, cultivated in the encloſures of the muſeum of natural hiſtory, have ſuffered nothing from the rigour of the laſt winter.—They are all in perfect vegetation, and many of them now in flower for the firſt time. Among theſe laſt is a plant from Botany Bay, the ſeeds of which were a preſent from Sir Joſeph Banks. It is leguminous, and appears to belong to the genus of *glycina*. It is remarkable for its configuration, which is different from that of all the plants of its family. Its flowers are of an amethyſt colour. The fruit is yet expected, which will enable the naturaliſts to determine the nature of the plant with more preciſion.

There is now exhibiting, at Berlin, a female dwarf, of a more diminutive and well-proportioned ſtature than any *Jeu de Nature* hitherto ſeen. Her name is Nannette Stockerin: ſhe is now 17 years of age, and of the ordinary ſize and growth of a child of 7 years old, exceedingly well proportioned, full of vivacity, and quick of apprehenſion. What is more remarkable, is the uncommon ſize and dimenſions of this child at her birth, and for the two following years,

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in which ſhe grew with ſo much rapidity as to attract the ſame notice from her unwieldineſs as ſhe now does from her diminutive proportion. Her parents were peaſants in Saxony, and both of them about the middle ſtature. This little perſonage received great attention from the imperial family, at Vienna, during her ſtay in that city, and is particularly admired in her preſent reſidence, at Berlin, by people of every rank.

EXTRACTS FROM THE JOURNALS OF MISSIONARIES IN OTAHEITE.

EARLY this morning, April 6, 1797, Otoo ſent ten men to prepare wood for erecting the blackſmith's ſhop. Our brethren from Eimeo returned, and made us the pleaſing report, that they had been very kindly received by the natives, who never attempted to ſteal any of our tools, and were ready to give us every aſſiſtance. Brother J. Puckey, on the Lord's day, had addreſſed them by Andrew; they heard attentively, and ſaid it was very good; but, it could be of no uſe to them to change their religion, as the brethren would ſoon leave them and carry away the book. We aſſured them we would return and teach them again very ſoon. The natives replied, if any of the chiefs embraced our religion, they ſhould follow.

APRIL 15. Wanted plank for the blackſmith's ſhop; told the king—He ſaid, "Harry-mie, come along." I thought he had ſome ready: I went with him and ſix men; he carried me up the valley, and, ſearching every houſe, took what he liked; many of the people ſtoutly reſiſted, but his men would not leave a plank. I told the king, with whom we exerciſed the moſt entire familiarity, that he was thief. "No," ſays he, "it is the cuſtom of Otaheite."

The king was carried on men's ſhoulders, and through ſuch dangerous places that he ran the greateſt riſk of breaking his bones; but he muſt not alight, as every place his foot touches becomes ſacred, and his own ground. At laſt we arrived at a territory of his own: when alighting, he took a majeſtic ſtride, and ſtalking on—"Puckey," ſaid he, "is this as King George walks?" I told him, yes. Having gone about three miles, I deſired to return, though the king would have gone farther, notwithſtanding the rain. He then gave me a hog, and made the people from whom he had taken the plank carry it down to our houſe."

MAY 28. This evening, after divine ſervice, I walked, ſays W. Puckey, with a native who had been ſome time with us; and from the beautiful ſcene of creation around us, I took occaſion to diſcourſe of him who had made all theſe things. He ſaid the God of Pretane made all things there, but not at Otaheite; that one of their gods reached up and ſtuck the ſtars in the ſky; and that Mawwa, a being of enormous ſtrength, holds the ſun with ropes, ſo that he may go no faſter than he pleaſes. I endeavoured to undeceive him reſpecting theſe tales of their prieſts; and, pointing to the houſe at Oparre, told him they were no gods who were placed there, but the work of men's hands; for there the three great gods, Ooroo, Tane, and Taroa, are, to whom they only ſacrifice in great extremities, when the prieſts ſay they are angry. I aſked the young man how this was done? he, laughing, ſaid, on theſe occaſions a prieſt wrapped himſelf in a bundle of cloth, rolled up like a ball, and ſpoke

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in a ſharp, ſhrill, ſqueaking, voice, I am angry; ſetch me hogs, kill a man, and my anger will be appeaſed. I endeavoured to ſhew him the folly and knaviſhneſs of the impoſture, and regretted my want of words and language to make myſelf better underſtood. May the Lord haſten the happy time, when the power of the goſpel ſhall take root in the hearts of theſe benighted people.

JUNE 11. A fact was reported to us this day, which, if true, was ſhocking. In one of Capt. Cook's viſits he left a great monkey, who was made a chief at Attahooroo: he had a wife and thirty ſervants, and abundance of every thing; they called him Taata ooree harrai, the great man-dog. One day the woman ſeeing him catch the flies and eat them, which they abominate, ſhe ran away into the mountains; the monkey and his tontous purſued, but being met by Temarre, who was jealous of his authority, he knocked him down with a club and killed him.

OF LIVING ANIMALS FOUND ENCLOSED IN STONES AND OTHER SOLID SUBSTANCES.—By F. W. A. MURHARD.

OF living animals being found encloſed in ſolid maſſes, I have met with no mention in the works of the ancients. Martial, indeed, in one of his Epigrams, ſpeaks of inſects encloſed in amber; but theſe animals were dead, and therefore do not belong to this ſubject. As far as I know, Fulgos is the firſt author who makes mention of a living toad being found encloſed in a ſtone. He wrote about the beginning of the 16th century; and, the circumſtance took place in the village of Meudon in Italy, in the time of Pope Martin V. He was informed by a ſtone-cutter, that there was nothing ſurpriſing in it, as ſuch phenomenon had often occurred to himſelf. Agricola, who lived afterwards, ſpeaks of poiſonous frogs being found in ſtones, but which ſoon died when expoſed for a ſhort while to the air. Aldrovandus alſo ſpeaks of marble in which theſe animals were found alive. Ray at firſt doubted the truth of theſe relations; but his doubts were ſoon removed by the undoubted teſtimony of eye-witneſſes. Accounts of a ſimilar kind may be found in Francis's Theatre of Various Curioſities, printed at Nuremberg in 1671. The author there ſpeaks of toads, crabs, ſerpents, and ſhell-fiſh, found in ſtones; but it is very evident that he confounds theſe with petrifactions.

Lloyd, in his third letter at the end of his Lithophylacii Britannici Ichnographia, ſays he was informed by Dr. Richardſon, that he had found a living toad encloſed in a ſolid rock. Dr. Bradley mentions a fact of the like kind, having been witneſs to a toad found in the trunk of a large oak. We are told in the Hiſtory of the Academy of Sciences at Paris for the year 1719, that a toad was found encloſed in an elm as thick as a man's body. As ſoon as the trunk was cleft the animal dropped out, and no opening could be diſcovered through which it had got into the heart of the wood. A ſimilar circumſtance is mentioned in the ſame work for 1731, viz. of a toad being found in an oak at leaſt eighty or an hundred years old.

Labat, in his Travels through Spain and Italy, gives a very minute deſcription of a kind of ſhell-fiſh found in ſtones fiſhed up from the ſea in the territories of Civita Vecchia, and which were eaten by the inhabitants. "While walking," ſays he, "on the coaſt of

Bichiere, I had the pleaſure of ſeeing fiſhed up ſeveral ſea dates *(dattoli di mare)* which are produced and grow in certain ſtones of a ſomewhat ſpongy nature, found in great abundance in the Adriatic ſea, and of which there are ſome alſo in the port of Civita Vecchia. Theſe ſea dates, which are a kind of muſcles, are almoſt round, pointed at both ends, and conſiſt of two ſhells, which open on one ſide, and are from one or two to nearly four inches in length.—The ſhell is of the ſame quality as that of the common muſcle, but it is a little browner and leſs ſmooth on the outſide. The inſide has a ſomewhat ſilvery appearance. The fiſh which they contain is white, delicate, fat, and of a very agreeable taſte, ſo that it is a morſel for cardinal *(un boccone di cardinale.)* They are called dates, becauſe the ſhell which contains the fiſh has a great reſemblance to the dates of Barbary when they are ripe and dried. The ſtone in which they are encloſed is heavy and pretty ſolid, though it appears ſpongy. The cavity which the ſhell occupies in the ſtone, and which it exactly fills, touches it on all ſides like the beſt fitted caſe. Some ſmall ones are not half an inch in length, but others are four inches. When the fiſhermen had procured a ſufficient number of the ſtones, they placed them on the edge of the quay, and broke them by means of a large hammer. In ſome they found nothing, but others contained two or three dates. They gave ſome of them to me, together with fragments of the ſtone which encloſed them, and on which I made the above obſervation."

Inſtances of a ſimilar kind may be found alſo in various other works. Thus we are told that Charles Hall, a merchant at Eberach, ſaw a living toad ſitting in a ſtone, upon its being broken. Martin Weinreich relates a circumſtance of the like kind; and John Nardius ſays, that he found in a block of marble a living ſnake. Libavius ſpeaks of vipers and toads found in ſtones, as does alſo Cardan. A living toad was found in an oak by Seigne in 1731, and another in a hard ſtone, at Ecretteville, by Le Prince in 1756.

A great many particulars relating to this ſubject have been collected by Guettard. A common toad, two of whoſe feet were free, and the other two ſticking faſt in gypſum, ſo that it was impoſſible to diſengage them without tearing them to pieces, was ſent to him by order of the Duke of Orleans —Count Herman II. of Hatzfeld, told Dr. Sachſen that he heard a living frog croak in the middle of a ſtone at his palace of Schellenberg, near Cologne, and that the animal hopped out on the ſtone burſting of itſelf.

In the year 1753 a living toad was found by J. M. Graberg in a ſolid hard block of ſtone, dug up from a quarry in the pariſh of Wamblingebo, in Gothland, and which he cauſed to be broken by the workmen. The colour of the animal was blackiſh grey, a little ſpotted on the back, and ſomewhat fainter on the belly. Its eyes were ſmall and round, and covered by a tender ſkin or film, under which they ſeemed to ſparkle a little with a colour like that of pale gold. Having touched it on the head with a ſtick, it contracted its eyes as if it had been aſleep; as ſoon as the ſtick was removed, it gradually opened them; but moved neither its body not feet in the leaſt, though he touched it different times. He remarked alſo that the mouth had no aperture. It was covered with a yelloviſh ſkin, which he examined alſo with the ſtick, but he was not able to make it open it. Having at laſt preſſed it on the back, a little clear water iſſued from it behind, upon which it immediately died. Don Antonio

tonio de Ulloa, who, with Condamine, Bouguer, and Godin, was employed in meaſuring a degree of the meridian in Peru, ſaw at Madrid two worms which had been found in the middle of a block of marble by the King of Spain's ſtatuary. Miſſon, in his Travels through Italy, ſpeaks of a living crab being found in a piece of marble near Tivoli. M. Peyſonnel, phyſician to the King of France, having employed ſome workmen to dig a well near his houſe in Guadaloupe, they found living frogs amidſt the ſtrata of the rock. His curioſity being excited by this circumſtance, he deſcended into the well himſelf, bored into the rock, and brought up ſome green frogs, which had a perfect reſemblance to the common ones.

In the Gentleman's Magazine for 1756 mention is made of a living toad found in a block of marble, at an old caſtle belonging to Lord Tankerville, twelve miles N. W. from Alnwick. T. Whiſſon relates, that, in the year 1743, a ſtone-cutter named Charlton, found near Wiſbich, in the Iſle of Ely, a living toad encloſed in a piece of marble. Being called to the ſpot, he ſaw the animal and the cavity in which it was contained. The latter was ſomething larger than the toad, and had almoſt the ſame figure. The animal was of a dark yellow colour; and the ſolid marble, which encloſed it on all ſides, was ſeveral inches thick. It ſeemed to be quite healthy, and by its long confinement had not become meagre. John Malpas, alſo, in the year 1755, found a living toad encloſed in a piece of freeſtone at Great Yarmouth. The hole in which it lay was ſix inches diſtant from the corner of the ſtone. He took it out with a pair of compaſſes, but in doing ſo happened to hurt it. When he placed it on the ground, it, however, crept about, but died in the courſe of an hour. It had a yellow ſtripe over the back, the colour of which became changed after it was dead. No crack or cleft could be diſcovered in the ſtone. The inſide of the cavity was ſmooth, and looked as if it had been poliſhed.

M. Gerhard, at Padenburg, in the county of Mansfield, ſaw likewiſe a living toad encloſed in a ſtone. The cavity in which it lay ſeemed exactly fitted to the ſize of the animal, but was exceedingly ſmooth in the inſide. No opening could be obſerved through which it was poſſible for it to have got into the ſtone. After ſome ſearch, however, a hole was diſcovered at the ſurface of the earth, which extended to the depth of twelve toiſes; but ceaſed at the diſtance of thirteen inches above the cavity that contained the toad. M. Gerhard conſiders it as very probable that this aperture had formerly been extended to the cavity, into which the egg of a toad might be conveyed by water; and that the opening muſt afterwards have been cloſed up near the cavity.

The toad, however, muſt have remained long in this ſtate, for ſuch apertures do not cloſe up ſoon, and a long time is required for the petrifaction of earthly particles.

M. le Cat, who relates many inſtances of the like kind, examines the poſſibility of them, and the cauſes of ſuch phenomena. Some philoſophers have been of opinion, that the eggs of theſe animals, created by the Supreme Being at the beginning of the world, and floating about on the watery expanſe, have, ſince that time, been encloſed in the interior parts of the rocks. But M. le Cat contradicts this opinion by remarking, that the creation of an egg is not ſufficient, and that it muſt be hatched in order to produce a living creature.

creature. He conſiders it alſo as impoſſible that ſuch animals can be of the ſame antiquity as the ſtones or ſubſtances in which they are found. The age of the oldeſt men, ſays he, never exceeded 169 years; and what is the life of an inſect when compared with that of man? Even if we ſuppoſe that the moderation of theſe animals, and their being expoſed to very little motion, had cauſed their growth, and the period of their life to be extended in an uncommon degree; and though their want of air, or rather their being preſerved and defended from the manifold impreſſions of that corrupted element, had contributed a great deal to their ſupport, the prolongation of life thence ariſing could not exceed ſo very much their natural and uſual exiſtence. M. le Cat rather thinks that a hatched egg, in all the caſes mentioned, may have fallen by chance into ſome ſmall cavity, where it was ſecured from petrifaction till its ſubſtance acquired ſufficient ſtrength. He here remarks that eggs, when rubbed over with varniſh ſo as to be defended from the effects of the air, may be preſerved fruittul for years; and he therefore believes, on good grounds, that an egg ſo ſecured in the center of a rock might retain its activity for ſome thouſands of years, and even that it would be impoſſible for it to be hatched till it had been expoſed to a very high degree of often renewed or long continued heat. According to M. le Cat's opinion, it is the egg which is of great antiquity, and not the animal. I ſhall here obſerve that nature, when allowed peace and reſt, does not require ſo much time as is generally believed in order to produce minerals. Of the truth of this remark I am fully convinced ſince I ſaw in the muſeum of Gottingen the ſtep of a ladder found on clearing the gallery of a mine in Rammelſberg, abandoned at moſt about one hundred years before, and which in the courſe of that period had been entruſted with ſelenite ſeven inches in thickneſs. Nay we have inſtances of ore having grown up in a much ſhorter time.

I muſt obſerve alſo, that moſt of the animals found in this manner were of the amphibious kind, and requeſt the reader to reflect on the habits, nature, and mode of living, peculiar to that claſs. Caldeſi relates, that tortoiſes can endure hunger for half a-year; and numberleſs inſtances might be produced of their ſtrong and tough nature.

I ſhall not enlarge farther on this ſubject at preſent, as I mean, at ſome future period, to communicate my ideas to the public in a more connected manner, and to give as complete a theory on it as poſſible. I flatter myſelf that I am the more qualified for this taſk, as many have written on theſe phenomena and formed conjectures without having ever ſeen one inſtance, while I have been an eye-witneſs of ſome of the lateſt. In a quarry not far from Caſſel, between that city and the palace of Freyenhagen, I found three toads together in a pretty large block of freeſtone. I remember, alſo, that when a boy, our houſe at Caſſel being under repair, and the old plaiſter pulled down, ſeveral toads were found between it and the ſtone wall.

At a period like the preſent, when ſo many things are made the ſubject of experiment, when every one endeavours to tread in the footſteps of a Bacon and a Newton, and, inſtead of being contented with ſurveying Nature in her private receſſes, and carefully watching her progreſs, compels her, as it were, to labour and make known her ſecrets, I am much aſtoniſhed that ſhe has not been put to the

proof in this reſpect long ago. Such experiments, without which all theory muſt ever remain mere hypotheſis, and can never amount to demonſtration, would require little or no expence. Nothing would be neceſſary but to make a deep hole in a ſtone, to encloſe ſome animal in it, ſuch, for example, as a toad, and to prevent the air from penetrating to it; or eggs only might at firſt be put into the ſtone. It would, however, be attended with moſt advantage if ſeveral experiments were made at the ſame time, in order that the ſtate of the animals might be examined at different periods. Such experiments, and careful obſervation of the nature and economy of theſe animals, could alone lead to any certain concluſion reſpecting a circumſtance ſo abſtruſe, which, at preſent, ſeems to ſurpaſs the powers of our comprehenſion.

ON THE SIN OF ONAN.

ONANIA, or Onaniſm, are terms lately framed to denote the crime of ſelf-pollution, mentioned in ſcripture to have been committed by Onan, and puniſhed in him with death. This practice, however common, hath among all nations been reckoned a very great crime. In ſcripture, beſides the inſtance of Onan above-mentioned, we find ſelf-polluters termed *effeminate*, *unclean*, *filthy*, and *abominable*. Even the heathens, who had not the advantage of revelation, were of the ſame opinion, as appears from the following lines of Martial:

Hoc nihil eſſe putes! ſcelus eſt, mihi crede; ſed ingens
Quantum vix animo concipis ipſe tuo.

You think 'tis nothing! 'tis a crime, believe!
A crime ſo great you ſcarcely can conceive.

Dr. Tiſſot has publiſhed a treatiſe on the pernicious effects of this ſhameful practice, which appears to be no leſs baneful to the mind than to the body. He begins with obſerving, that, by the continual waſte of the human body, aliments are required for our ſupport. Theſe aliments, however, require certain preparations in the body itſelf; and, when by any means we become ſo altered that theſe preparations cannot be effected, the beſt aliments then prove inſufficient for the ſupport of the body. Of all the cauſes by which this morbid alteration is brought on, none is more common than too copious evacuations; and of all evacuations, that of the ſemen is the moſt pernicious when carried to exceſs. It is alſo to be obſerved, that, though exceſs in natural venery is productive of very dangerous diſorders, yet an equal evacuation by ſelf-pollution, which is an unnatural way, is productive of others ſtill more to be dreaded. The conſequences enumerated by Dr. Tiſſot are as follow:

1. All the intellectual faculties are weakened; the memory fails; the ideas are confuſed, and the patient ſometimes even falls into a ſlight degree of inſanity. They are continually under a kind of inward reſtleſſneſs, and feel a conſtant anguiſh. They are ſubject to giddineſs; all the ſenſes, eſpecially thoſe of ſeeing and hearing, grow weaker and weaker, and they are ſubject to frightful dreams.

2. The ſtrength entirely fails, and the growth in young perſons is conſiderably checked. Some are afflicted with almoſt continual watching,

watching, and others doſe almoſt perpetually. Almoſt all of them become hypochondriac or hyſteric, and are afflicted with all the evils which attend theſe diſorders. Some have been known to ſpit calcareous matter; and others are afflicted with coughs, ſlow fevers, and conſumptions.

3. The patients are affected with the moſt acute pains in different parts of the body, as the head, breaſt, ſtomach, and inteſtines; while ſome complain of an obtuſe ſenſation of pain all over the body on the ſlighteſt impreſſion.

4. There are not only to be ſeen pimples on the face, which are one of the moſt common ſymptoms; but even blotches, or ſuppurative puſtules, appear on the face, noſe, breaſt, and thighs; and ſometimes fleſhy excreſcences ariſe on the forehead.

5. The organs of generation are alſo affected; and the ſemen is evacuated on the ſlighteſt irritation, even that of going to ſtool. Numbers are afflicted with an habitual gonorrhœa, which entirely deſtroys the vigour of the conſtitution, and the matter of it reſembles a fetid ſanies. Others are affected with painful priapiſms, dyſuries, ſtranguries, and heat of urine, with painful tumours in the teſticles, penis, bladder, and ſpermatic cord; and impotence in a greater or leſs degree is the never-failing conſequence of this deteſtable vice.

6. The functions of the inteſtines are ſometimes totally deſtroyed; and ſome patients complain of coſtiveneſs, others of diarrhœa, piles, and the running of a fetid matter from the fundament.

With regard to the cure, the firſt ſtep is to leave off thoſe practices which have occaſioned the diſeaſe: which our author aſſerts is no eaſy matter; as, according to him, the ſoul itſelf becomes polluted, and can dwell on no other idea; or, if it does, the irritability of the parts of generation themſelves quickly recal ideas of the ſame kind. This irritability is no doubt much more to be dreaded than any pollution the ſoul can have received; and, by removing it, there will be no occaſion for exhortations to diſcontinue the practice. The principal means for diminiſhing this irritability are, in the firſt place, to avoid all ſtimulating, acrid, and ſpiced, meats. A low diet, however, is improper, becauſe it would farther reduce the body, already too much emaciated. The food ſhould therefore be nutritive, but plain, and ſhould conſiſt of fleſh rather roaſted than boiled, rich broths, &c. It is certain, however, that, as theſe foods contribute to reſtore the ſtrength of the body, the ſtimulus on the organs of generation will be proportionably increaſed by the ſemen which is conſtantly ſecreted, and which will now be in larger quantity than even in healthy perſons, owing to the great evacuations of it which have preceded. Some part of the ſemen is gradually abſorbed by the lymphatics; in conſequence of which, the remainder becomes thick, acrid, and very ſtimulating. To remedy this, exerciſe is to be uſed, and that not only for pleaſure, but till it is attended with a very conſiderable degree of fatigue. The ſleep alſo muſt be no more than is barely ſufficient to repair the fatigues occaſioned by the exerciſe, or other employment; for an exceſs in ſleep is as bad as idleneſs or ſtimulating foods. Exceſs in wine or intoxicating liquors is alſo to be avoided; or rather ſuch liquors ought never to be taſted, unleſs as a medicine to reſtore the exhauſted ſpirits: and to all this ought to be joined the Peruvian bark, which hath this admirable property, that, with little or no ſtimulus, it reſtores the tone

of the ſyſtem, and invigorates the body in a manner incredible to thoſe who have not obſerved its effects. If theſe directions are followed, the patient may almoſt certainly expect a recovery, provided any degree of vital ſtrength remains; and thoſe who deſire a life of celibacy on a moral account, will find them much more effectual than all the vows of chaſtity they can make.

EXTRACTS FROM PARK's TRAVELS IN THE INTERIOR OF AFRICA.

THE African native is humane and inoffenſive; and, where he has had little intercourſe with Europeans, exhibits that kind of being in a ſtate of nature which philoſophy loves to develope, and poetry delights in praiſing. Such of the natives as have been converted to Mahometaniſm are extremely ſtrict in their religious obſervances; and the prieſt here, as in other countries, has a very powerful influence, which cannot be better elucidated than by the following relation of what paſſed at Teeſee, reſpecting a newly-married couple:

Tiggitty Sego (the king) held a palaver (ſo they call a legal court or public meeting) on a very extraordinary occaſion, which I attended; and the debates on both ſides diſplayed much ingenuity.—The caſe was this:—"A young man, a kafir, of conſiderable affluence, who had recently married a young and handſome wife, applied to a very devout buſhreen, or Muſſulman prieſt, of his acquaintance, to procure him ſaphies for his protection during the approaching war. The buſhreen complied with the requeſt; and in order, as he pretended, to render the ſaphies more efficacious, enjoined the young man to avoid any intercourſe with his bride for the ſpace of ſix weeks. Severe as this injunction was, the kafir ſtrictly obeyed; and, without telling his wife the real cauſe, abſented himſelf from her company. In the mean time it began to be whiſpered at Teeſee that the buſhreen, who always performed his evening devotions at the door of the kafir's hut, was more intimate with the young wife than he ought to be. At firſt the good huſband was unwilling to ſuſpect the honour of his ſanctified friend, and one whole month elapſed before any jealouſy aroſe in his mind; but, hearing the charge repeated, he at laſt interrogated his wife on the ſubject, who frankly confeſſed that the buſhreen had ſeduced her. Hereupon the kafir put her into confinement, and called a palaver upon the buſhreen's conduct. The fact was clearly proved againſt him, and he was ſentenced to be ſold into ſlavery, or to find two ſlaves for his redemption, according to the pleaſure of the complainant. The injured huſband, however, was unwilling to proceed againſt his friend to ſuch extremity, and deſired rather to have him publicly flogged before Tiggitty Sego's gate. This was agreed to, and the ſentence was immediately executed. The culprit was tied by the hand to a long ſtake; and, a long black rod being brought forth, the executioner, after flouriſhing it round his head for ſome time, applied it with ſuch force and dexterity to the buſhreen's back, as to make him roar until the woods reſounded with his ſcreams. The ſurrounding multitude, by their hooting and laughing, manifeſted how much they enjoyed the puniſhment of the old gallant; and, it is worthy of remark, that the number of ſtripes was preciſely the ſame as are enjoined by the Moſaic Law, FORTY *ſave one.*"

It

It may not be improper here, or unacceptable to our readers, to give Mr. Park's account of the mode of courtſhip adopted by the natives, and of their marriage-ceremony:

"If a man takes a fancy to a woman, it is not conſidered as abſolutely neceſſary that he ſhould make an overture to the girl herſelf. The firſt object is to agree with the parents, concerning the recompence to be given them for the loſs of the company and ſervices of their daughter. The value of two ſlaves is common, unleſs the girl is thought very handſome, in which caſe the parents will raiſe their demand very conſiderably. If the lover is rich enough and willing to give the ſum demanded, he then communicates his wiſhes to the damſel; but her conſent is by no means neceſſary to the match; for if the parents agree to it, and eat a few *kolla-nuts*, which are preſented by the ſuitor as an earneſt of the bargain, the young lady muſt either have the man of their choice, or continue unmarried, for ſhe cannot afterwards be given to another. If the parents ſhould attempt it, the lover is then authorized, by the laws of the country, to ſeize upon the girl as his ſlave.—When the day for celebrating the nuptials is fixed on, a ſelect number of people are invited to be preſent at the wedding; a bullock or goat is killed, and great plenty of victuals dreſſed for the occaſion. As ſoon as it is dark, the bride is conducted into a hut, where a company of matrons aſſiſt in arranging the wedding-dreſs, which is always white cotton, and is put on in ſuch a manner as to conceal the bride from head to foot. Thus arrayed, ſhe is ſeated on a mat in the middle of the floor, and the old women place themſelves in a circle round her. They then give her a ſeries of inſtruction, and point out with propriety what ought to be her future conduct in life. This ſcene of inſtruction, however, is frequently interrupted by the girls, who amuſe the company with ſongs and dances, which are rather more remarkable for their gaiety than delicacy. While the bride remains within the hut with the women, the bridegroom devotes his attention to the gueſts of both ſexes, who aſſemble without doors, and by diſtributing among them ſmall preſents of *kolla-nuts*, and ſeeing that every one partakes of the good cheer which is provided, he contributes much to the general hilarity of the evening. When ſupper is ended, the company ſpend the remainder of the night in ſinging and dancing, and ſeldom ſeparate until day-break.—About midnight the bride is privately conducted by the women into the hut which is to be her future reſidence; and the bridegroom, upon a ſignal given, retires from his company. The new-married couple, however, are always diſturbed towards morning by the women, who aſſemble to inſpect the nuptial ſheet (according to the manners of the ancient Hebrews, as recorded in ſcripture), and dance round it. This ceremony is thought indiſpenſably neceſſary, nor is the marriage conſidered valid without it."

ON A NEW INSECT CALLED ANTIODONTALGICUS.

And the Property poſſeſſed by it, in common with ſome other Inſects, of curing the TOOTH-ACHE.

PROFESSOR Gerbi, in a ſmall work publiſhed at Florence, in 1794, gives the deſcription and figure of an inſect, which is a kind of *curculio*, that, from its property of allaying the tooth-ache, has

has received the epithet of *antiodontalgicus*, and which is found on a ſpecies of thiſtle, *carauus ſpinoſiſſimus*, of which a figure is likewiſe given. This thiſtle is compared, by Profeſſor Gerbi, to the thiſtle of Boujarti, and is, perhaps, a variety of the *cnicus*. Its flowers, when analyſed, gave the acid of galls, the muriatic acid, oxalat of lime, extractive matter, and very little reſin. On the bottom of the calyx, which ſupports the flowers, there are often found excreſcences like the gall-nut, which are at firſt ſpheroidical, afterwards cylindric, and at length aſſume the figure of two hemiſpheres: they conſiſt of the like component parts, but contain more reſin, and far more oxalat or lime; as the gall-apple of the oak, according to the experiments of M. Branchi, which are here mentioned, contains more of the acid of galls than the bark and other parts of the oak, in which he could diſcover no ſulphuric acid. The inſect, according to the author's obſervations, eats not only the parenchyma, but alſo the veſſels and fibres of the leaves. The egg, before the worm makes its appearance, is nouriſhed by the ſap of the plant, and of the above excreſcences, in which it reſides, by means of the attractive powers that the egg poſſeſſes for certain vegetable juices and ſubſtances. The excreſcences ariſe by the accumulation of a ſolid ſubſtance, which is precipitated from the nouriſhing juices of the thiſtle, diminiſhed by nouriſhing the egg and worm. This inſect, the eggs of which are depoſited in theſe excreſcences, is, together with the *curculio* of the centaury, a new ſpecies. It is of a longiſh figure; covered below with ſhort yellow hair, and above with golden yellow velvety ſpots. Its corſlet is variegated with ſpecks; and the covering of its wings with ſpecks and ſtripes. It has a ſhort proboſcis, and ſhews ſome likeneſs to the *curculio villoſus* of Geoffroy. Its larva repreſents a ſort of ichneumon. By chemical analyſis, it exhibits ſome traces of common ſalt; by diſtillation with a ſtrong dry heat, ſome volatile lixivious ſalts; and it contains, beſides theſe, ſome gelatinous, and a little ſubacious and ſlimy, extractive matter. If about a dozen or fifteen of theſe inſects, when in the ſtate of larva, or even when come to perfection, be bruiſed and rubbed ſlowly between the fore-finger and thumb until they have loſt their moiſture, and if the painful tooth, where it is hollow, be touched with that finger, the pain ceaſes ſometimes inſtantaneouſly. This power or property the finger will retain for a-year, even though it be often waſhed and uſed. A piece of ſhamois leather will ſerve equally well with the finger. Of 629 experiments, 401 were attended with complete ſucceſs. In two of theſe caſes the hollow teeth aroſe from ſome fault in the juices; in the reſt they were merely local.

If the gums are inflamed, the remedy is of no avail. According to Profeſſor Gerbi, the hollowneſs in the teeth ariſes from an acrid matter which irritates the nerves, and which is neutraliſed by the juices of the inſect.

This property of curing the tooth-ache has been diſcovered in other inſects, as appears by a paper of Dr. Corradori, inſerted in the *Giornale fiſico-medico* of Brugnatelli, Part I. The experiments were made in the town of Prato, where the property of ſome inſects to cure the tooth-ache had been known among the peaſants, even before any thing was publiſhed on the ſubject by Gerbi and Comparini. A certain Luigi Mari is here made to aſſert, that he laid hold of about a dozen of theſe inſects with his fingers, and heaped them

them over each other, by which means his fingers, for a whole year, though he daily washed his hands, were endowed with the property of curing the tooth-ache, by merely touching the affected tooth. The author of the letter affirms, that the following method will always afford relief. The insect described by Rossi, in his *Fauna Etrusca*, under the name of *Carabus chrysocephalus*, is to be held for some minutes between the thumb and the fore-finger, and the diseased tooth and the gums are to be afterwards touched with that finger. If the pain does not cease on the first touching, the finger is to be well dried, and must be applied to the insect again, and then to the tooth; and this is to be continued alternately till the pain ceases entirely. M. Cypriani asserts, that he cured every case of the tooth-ache, without exception, by this method, within the space of eight or nine minutes.

More insects possess the like property, and experiments made with the following were equally successful. The *carabus ferrugineus* of Fabricius; the *coccinella septem punctata* (the lady-bird); the *chrysomela populi*, and the *chrysomela sanguinolenta*. It would appear that this property belongs to various kinds of the *coleoptera*.

The idea of these insects being endowed with the property of curing the tooth-ache is not confined to Italy; for Dr. Hirsch, dentist to the court of Weimar, asserts, in the *Verkundiger*, Sept. 24, 1798, that he employed them with the happiest effect, except in some places where his patients were females. Dr. Hirsch says, that he took that small insect, found commonly among corn *coccinella septempunctata*, and bruised it between his fingers.—He then rubbed the fingers with which he had bruised it till they became warm at the points, and touched with them the unsound parts of the gums, as well as the diseased tooth. Dr. Hirsch adds, that he made the same experiment a few days after, with equal success, though he had not bruised a new insect with his fingers. He seems to think, though the other authors we have quoted do not mention the circumstance, that to insure the efficacy of the process the insect should be alive; because, when dead, its internal parts, in which he presumes the virtue chiefly resides, become dried up, leaving only the wings and an empty shell; and therefore proposes to physicians, to turn their attention to the finding out some method for preserving the virtue of the insect, so that its efficacy may be in full vigour throughout the year. An English practitioner has proposed, that impregnated shamois leather should be imported by the way of Leghorn; but as the virtue seems to belong to several *coleoptera* in this country, such an importation is unnecessary. The impregnating of leather (other substances might also be tried) by rubbing it with the insects, seems a good way of realising what has been proposed by Dr. Hirsch.

While on the subject of tooth-ache, we may add the following:—A lady to whom charcoal-powder was recommended as a dentifrice, was subject at times to violent tooth-ache, from one of the *dentes sapientiæ* that was become carious. She one day, when in great pain, filled the cavity of the tooth with the charcoal dentifrice, and was surprised to find herself in a few seconds free from pain. It might probably be urged, that any substance filling the hollow of the tooth mechanically, and thereby preventing the access of atmospheric air, would produce the same effect: but the physician who attended

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the lady attributes the *temporary* good effect experienced in this case to the power of the charcoal.

MANNER OF FOWLING IN St. KILDA, IN THE HEBRIDES.

THE art of the St. Kildians at catching fowls under the cloud of night is truly aſtoniſhing, and their ſucceſs no leſs wonderful.

A man from that iſland told the writer of this, that he was one of four men that catched four litts, or pens, being three hundred each, in the whole 1200 ſolan geeſe, in one night. That bird, after the hard toil of the day at fiſhing without intermiſſion, riſing high in the air to get a full ſight of the fiſh that he marks out for his prey before he pounces upon it, and each time devouring it before he riſes above ſurface, becomes ſo fatigued at night that he ſleeps quite ſound, in company with ſome hundreds, who mark out ſome particular ſpot, in the face of the rocks, to which they repair at night, and think themſelves ſecure under the protection of a centinel, who ſtands awake to watch their lives, and give the alarm by bir, bir, in time of danger, to awaken thoſe under his guard.

The St. Kildians watch with great care on what part of the iſland theſe birds are moſt likely to alight at night; and this they know by marking out on which ſide of the iſland the play of fiſh is, among which the geeſe are at work the whole day; becauſe in that quarter they are ready to betake themſelves to ſleep at night. And, when they are fairly alighted, the fowlers repair to the place with their panniers, and ropes of thirty fathoms in length, to let them down with profound ſilence in their neighbourhood—to try their fortunes among the unwary throng.

The fowler, thus let down by one or more men, who hold the rope leſt he ſhould fall over the impending rocks into the ſea, with a white towel about his breaſt, calmly ſlides over the face of the rocks till he has a full view of the centinel; then he gently moves along on his hands and feet, creeping very ſilently to the ſpot where the centinel ſtands on guard. If he cries bir, bir, the ſign of an alarm, he ſtands back; but if he cries grog, grog, that of confidence, he advances without fear of giving an alarm, becauſe the gooſe takes the fowler for one of the ſtraggling geeſe coming into the camp, and ſuffers him to advance. The fowler very gently tickles one of his legs, which he lifts and places on the palm of his hand; he then as gently tickles the other, which in like manner is lifted and placed on the hand. He then no leſs artfully than inſenſibly moves the centinel near the firſt ſleeping gooſe, which he puſhes with his fingers, on which he awakes, and, finding the centinel ſtanding above him, he immediately falls to fight him for ſuppoſed inſolence. This alarms the whole camp, and, inſtead of flying off, they all begin to fight through the whole company; while, in the mean time, the common enemy, unſuſpected, begins in good earneſt to twiſt their necks, and never gives up till the whole are left dead on the ſpot.

This gooſe is almoſt as large as a land gooſe, of a white colour, except the top of the wings, which are black, and the top of the head, which is yellow. The bill is long and ſharp pointed, extremely hard, and pierces an inch deep into wood. There is an act of parliament againſt the cruel manner of faſtening herrings on planks far out to ſea, to catch thoſe darling geeſe, and a ſevere penalty on tranſ-

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greſſors of this humane act. A well-ſupported fact concerning the ſtrength of this fowl, is told by one of the tackſmen of this iſland. Once when ſailing towards St. Kilda, and entering upon a field of ſea, where the geeſe were buſy darting among the fiſh from on high, on each ſide of the large barge on which he ſat, and ſailing faſt before the wind, the barge paſſed over a fiſh ſo quickly that a gooſe who had marked it out, and ruſhing ſo violently through the air, inſtead of the fiſh, on account of the unforeſeen accident, darted his ſtrong bill quite through the barge, and was actually carried back dead, with his bill through the plank, as a teſtimony of the fact.

The neſts of the ſolan geeſe, not to mention others, are ſo very cloſe, that, when one walks between them, the hatching fowls on either ſide can always take hold of one's clothes; and, ſays Mr. Martin, will often ſit ſtill till they are attacked, rather than expoſe their eggs to be deſtroyed by the ſea-gulls. Their mates furniſh them with food while they hatch.

The ſeaſon for catching the old ſolan geeſe, is before they begin to lay. About the middle of May is the time of gathering their eggs. —The young ſolan geeſe are larger than their mothers before they begin to fly, being extremely fat. The fat on the breaſt is very deep. The greaſe is kept in bags made of the ſtomach of old geeſe. They have never but one egg at a hatching, in any neſt at St. Kilda. They lay again, and even a third time, if deprived of the firſt egg. The ſolan gooſe can carry five herrings at a time to his mate or young, and ſpew them out of his gorget into the neſt. This fowl digeſts ſo quickly, that inſtances are given when the bird was ſhot immediately as he appeared above the ſurface; and the fiſh was found half digeſted in his ſtomach, that was juſt devoured below.

OF THE INFLUENCE OF SNOW AND RAIN IN VEGETATION.

ALL thoſe who inhabit parts of the earth expoſed to ſnow, agree in conſidering this meteor as one of the means employed by nature to give to plants more ſtrength, and to make them expand with more vigour. Several even are perſuaded that winters which produce no ſnow preſage a bad harveſt and a feeble ſtate of vegetation; and they aſcribe its influence to the ſalts which they ſay exiſt in that congealed water. Snow collected in large maſſes, melted and evaporated in earthen veſſels, having left no reſiduum, has made this ſuppoſition be conſidered as a mere chimera; and, in conſequence of reaſoning carried too far, ſome have been induced to deny that ſnow has any influence at all on vegetation.

In phenomena tranſmitted through ſucceſſive generations, we muſt diſtinguiſh the reſults of obſervation from the explanations ſome have attempted to give of them. There are phenomena, indeed, the whole of which preſent themſelves to our ſenſes in their full force, and which can leave no doubt in the mind of the leaſt attentive obſerver; but there are others which exhibit only a few traces that cannot be diſtinguiſhed, unleſs by particular inſtruments, or after a ſeries of obſervations often repeated. When theſe traces have been obſerved by a great number of individuals, for ſeveral generations, however incorrectly tranſmitted, and however obſcure may be the tradition, the philoſopher muſt beware of deciding too raſhly. The greater the number of obſervers, the more perfect is

the uniformity of their opinions reſpecting the phenomenon, and the more careful ought people to be in their diſcuſſions before they venture to contradict them.

The influence of ſnow on vegetation has been ſubjected to the examination of too many obſervers, to allow us to believe it poſſible that there could be ſo great an uniformity in their opinions, were not the effects really ſuch as are ſuppoſed. In this memoir, then, I ſhall examine theſe effects; I ſhall endeavour to explain the cauſe of them, and ſhall enquire what relation there is between the explanation given long ago by farmers and a more accurate analyſis of ſnow.

That, after a very cold and very ſevere winter, vegetation is ſtronger and more active in proportion as plants have been covered with a greater depth of ſnow is a certain fact, proved by the reſult of the experience of every one engaged in agriculture. The cauſe is ſimple and natural. All plants are capable of ſupporting cold in a leſs or a greater degree; there are ſome which cannot be expoſed to the temperature of melting ice without periſhing, and there are others on which the moſt intenſe cold produces no alteration. Each plant then has certain limits to its reſiſtance of cold; a certain temperature beyond which it cannot be expoſed to it without the danger of being frozen and deſtroyed. Several plants expoſed to a temperature nearly equal to that which muſt congeal them do not periſh, but, by the ſharpneſs of the cold which they experience, contract a languiſhing diſeaſe, the effects of which they feel during the whole courſe of their exiſtence.

If we expoſe to the action of great cold a ſeries of plants capable of ſupporting different degrees of it, there will periſh in that ſeries a greater number in proportion as the cold has been greater; but if, by means of a covering, we intercept the cold, and prevent the plants from being expoſed to a diminution of heat as great as that which exiſts without, ſeveral plants which would otherwiſe have periſhed will be preſerved; ſeveral of thoſe which would have been diſeaſed will be healthy and vigorous, and their number will be greater in proportion as the covering has intercepted a greater degree of cold.

The earth has a heat accumulated in its interior parts: this heat is perceived in all ſubterranean places of ſufficient depth to prevent the external cold or heat from penetrating thither. This temperature is equal to 13° on the decimal ſcale of the mercurial thermometer, (55·4 Fahr.) Snow is a bad conductor of heat; cold penetrates it with difficulty, and its temperature when it melts is zero (0). When the ſurface of the earth is covered to a conſiderable depth with ſnow, the cold of the atmoſphere, in contact with it, tends to cool its maſs; and the internal heat of the earth tends to warm it. Through the maſs of ſnow there is then a conteſt of heat and cold, the uſual reſult of which is to melt a portion of the ſnow, and to carry to zero the temperature of the middle, in which the plants are ſituated.

Thus ſnow has the property of keeping the plants which it covers at the temperature of melting ice; of preſerving them from the influence of a greater cold; of ſupplying them with continual moiſture; of preventing a great number from periſhing, and ſtill more from languiſhing; and, conſequently, of giving more ſtrength and vigour to vegetables than they would have obtained had they not been covered with ſnow. It appears then that we may explain a part of

the influence which ſnow has upon vegetation, without having recourſe to the ſalts or nitre which it is ſaid to contain, and which analyſis and experiments have proved do not exiſt.

The explanation of the influence of ſnow by the continual humidity it ſupplies to plants, is the reſult of obſervations which cannot have eſcaped intelligent farmers in all ages; but a knowledge of the influence it has by being a bad conductor of heat, is the conſequence of experiments recently made on caloric. The ancients had neither a ſeries of facts nor inſtruments proper for ſuch reſearches. They obſerved, that the atmoſphere ruſted metals in the ſame manner as acids; from which they concluded, that the air contained an acid. They remarked, that nitre was formed ſpontaneouſly on calcareous maſſes; from which they concluded, that the acid of the atmoſphere was a nitre: and this concluſion was not far from the truth, ſince the lateſt experiments, and moſt remarkable diſcoveries, which have contributed in the higheſt degree to the rapid progreſs of phyſics, have proved that the air is formed of two elements, which enter into the compoſition of the nitric acid, viz. oxygen and azot. Let us acknowledge, therefore, that the philoſophers who preceded us poſſeſſed no little acuteneſs and ſagacity to be able to diſcover, ſo long ago, by the accumulation of ſeveral indirect experiments, what the moſt accurate analyſis demonſtrates at preſent.

If ſnow poſſeſſed only the property of preſerving vegetables, and of preventing them from periſhing by the ſeverity of the cold, it is not at all probable that the ancient philoſophers would have conſidered it as depoſiting on the earth nitrous ſalts, as they might have aſcertained, by a very ſimple experiment, that it contains none of that ſalt; for they did not aſcribe the ſame property to rain-water, but they remarked that ſnow burnt the ſkin in the manner of acids, as well as other bodies immerſed in it. Being induced to conclude that there was nitre in the air, it was natural that they ſhould aſcribe to this nitre the burning qualities of ſnow, and conſequently its influence on vegetation.

C. Guyton having engaged me to examine the cauſe of the difference of the effects of ſnow and rain-water on various ſubſtances, I found that they were occaſioned by the oxygenation of the ſnow; and that theſe effects were to be aſcribed to a particular combination of oxygen in this congealed water. I put 1000 grammes of ſnow in a jar, and 1000 grammes of diſtilled water in another. I poured into each of the jars an equal quantity of the ſame ſolution of turnſole. I placed both the jars in a warm temperature, and, after the ſnow melted, I remarked that the dye was redder in the ſnow-water than in the diſtilled water. I repeated this experiment, and with the ſame reſult. I put into a jar 1000 grammes of diſtilled water, and into another 1000 grammes of ſnow. Into each of the jars I put 6·5 grammes of very pure and clean ſulphat of iron. In the firſt there was precipitated 0·150 grammes of the oxyd of iron, and 0·010 grammes in the other. As the oxyd of iron was precipitated from a ſolution of the ſulphat by oxygen, it thence follows, that the ſnow contained more oxygen than the diſtilled water; and it follows from the firſt experiment, that this quantity of oxygen was conſiderable enough to redden the tincture of turnſole.

It is fully demonſtrated by theſe two experiments, that ſnow is oxygenated water, and that it muſt conſequently have on vegetation

an action different from that of common ice. The experiments of Dr. Ingenhouſs, on the germination of ſeeds, have taught us that the preſence and contact of oxygen are abſolutely neceſſary for the plant to expand. They have ſhewn alſo, that, the more abundant the oxygen is, the more rapidly will the ſeeds grow. Moſt plants ſuffered to attain to their perfect maturity ſhed on the earth a part of their ſeed. Theſe ſeeds, thus abandoned and expoſed to the action of cold, are preſerved by the ſnow which covers them, at the ſame time that they find in the water, it produces by melting, a portion of oxygen that has a powerful action on the principle of germination, and determines the ſeeds that would have periſhed to grow, to expand, and to augment the number of the plants that cover the ſurface of the earth.

A very conſiderable number of the plants which we have the art of appropriating for our nouriſhment and our wants are ſown in the months of Vendemiaire, Brumaire, and even Frimaire, (end of September to end of December;) ſeveral of theſe ſeeds germinate before the cold commences its action upon them and changes the principle of their life. The ſnow which covers the reſt, acting on the germ by its oxygenation, obliges them to expand and to increaſe the number of uſeful plants which the farmer and gardener commit to the earth, and conſequently to multiply their productions.

Here then we have three effects of ſnow upon vegetation, all very different, which contribute each ſeparately to increaſe, every year, the number of our plants; to give them more vigour, and conſequently to multiply our crops. Theſe effects are: 1. To prevent the plants from being attacked by the cold, and from being changed or periſhing by its force. 2. To furniſh vegetables with continual moiſture, which helps them to procure thoſe ſubſtances neceſſary for their nutrition, and to preſerve them in a ſtrong healthy ſtate. 3. To cauſe a greater number of ſeeds to germinate, and conſequently to increaſe the number of our plants.

Before I conclude, I muſt mention ſome important experiments, in regard to vegetation, which I made on rain-water. Rain-water does not act on tincture of turnſole or on ſulphat of iron like ſnow; from which it would appear that it does not participate in that property which it acquires by oxygenation. Rain-water, however, contains oxygen alſo; but in a ſtate of ſolution, and not of combination, as in ſnow; for under an exhauſted receiver rain-water ſuffers air to eſcape from it, which contains proportions of oxygen much greater than river-water, ſpring-water, and even atmoſpheric air.

Atmoſpheric air expoſed to the action of phoſphorus, without the application of heat, after the method indicated by Berthollet, is diminiſhed in its bulk 0·20; that is to ſay, the phoſphorus takes from the azot 20 parts of oxygen in 100 parts of atmoſpheric air. Air drawn from the water of the Seine, tried by the ſame eudiometer, gave the ſame diminution. Air drawn from rain-water was, on the other hand, diminiſhed by phoſphorus from 0·32 to 0·40. As the mean of a great number of experiments was 0·35, it thence follows that the proportion of oxygen in the air obtained from rain-water, newly fallen, is greater and more conſiderable than that contained in atmoſpheric air, and in the air of other water.

Since rain-water thus differs from common-water by the oxygen it holds in ſolution, and ſince oxygen has an influence on germination,

and

and even on vegetation, as is proved by the experiments of Ingenhouſs and Senebier, it is natural to aſcribe to it a part of the peculiar action which rain has on the vegetation of plants different from that of other water with which they are watered. J. H.

BUONAPARTE's EXPEDITION.—Continued from p. 20.

HITHERTO Buonaparte ſeemed to have carried things with a high hand; but his defeat before the walls of Acre in Syria has been ſo complete, that in our next we may probably have to conclude with an account of the total extermination of the French in that quarter.—The following are the particulars ſince our laſt:

CONSTANTINOPLE, *June* 10, 1799. The conſul of his Britannic majeſty, at Smyrna, diſpatched on the 7th inſt. a courier extraordinary to Mr. Spencer Smith, who arrived this morning with the confirmation of the victory obtained by Ghezzar Pacha over Buonaparte, under the walls of Acre, in which Sir Sidney Smith particularly diſtinguiſhed himſelf. The Engliſh miniſter immediately communicated the intelligence to the Reis Effendi, who tranſmitted it to the Kamaican, by whom the ſultan was informed of it.

It is impoſſible to deſcribe the joy felt on this occaſion by the court and the public. Private letters ſtate, that all communication between Buonaparte and his troops in Egypt is intercepted. The Grand Vizier, who is on his march to Syria, was yeſterday at Nicomedia. Seid Ali, who commanded in Egypt before the invaſion of the French, is arrived from Aleppo, in this capital. He was wounded in two engagements with Buonaparte, in one by a muſket-ball, which paſſed through his ſhoulder, and in the other by a bayonet. He was immediately on his arrival introduced to the honours of audience with the Grand Signior, and received with marks of the higheſt eſteem.—Preſents of conſiderable value, and large ſums of money, have been given him, to compenſate for his immenſe loſſes at Cairo. He was yeſterday promoted to the rank of Pacha of Three Tails, with the title of Pacha-general of Egypt.

JUNE 18. This day the Porte officially imparted to the foreign ambaſſadors the report of Ghezar Pacha, reſpecting Buonaparte's defeat. In beſieging Acre, the French, by their mode of firing, had ſucceeded in making a breach ſixty feet wide. The bravery of the Turkiſh garriſon was eminently conſpicuous, and the number that fell is far from being inconſiderable; ſeveral Engliſh officers were alſo killed.

We are fearful that in our loſs is to be included the gallant Major Frederic Perrin, of the Turkiſh artillery, who is ſaid to have fallen in the enemy's trenches, together with two midſhipmen of le Tigre. The conduct of the Britiſh, particularly Sir Sidney Smith and Capt. Miller, is ſpoken of by our allies in terms of the higheſt admiration. The deplorable ſtate to which the French are reduced, in conſequence of Sir Sidney's having captured their flotilla, may be conceived from the circumſtance of their being obliged to fire ſtones at le Tigre, during the action, which, however, did our ſhips but inconſiderable damage. We are happy to ſtate, that Lieut. J. W. Wright, of le Tigre, who ſo highly diſtinguiſhed himſelf, and who had received two muſket balls through the upper part of the arm, is in a fair way of recovering.

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St. Jean d'Acre, on the coaſt of Syria, is fortified with a wall of very moderate ſtrength, having only one gate, and is a pretty large town, but many of the houſes are empty; the population is eſtimated by a late traveller, Mr. Brown, at between 15 and 20,000. There remains part of a double foſſe, which extended round the town, but is daily dilapidated for modern erections. It has no caſtle nor other relique of antiquity.—Acre ſtands on a promontory near a ſmall gulph. It has no haven: veſſels anchor in favourable weather near the ſhore; but the European ſhips oppoſite Haifa, a ſmall place at the foot of Mount Carmel, where the water is generally ſmooth. The trade of the place is pretty conſiderable: the Europeans carry thither broad cloth, lead, tin, and various other articles, and take away cotton in return.

Letters have been received from Sir Sidney Smith, written after the eleventh aſſault upon Acre. They ſtate the French army to be in ſuch a ſtate of diſtreſs that it was highly improbable another aſſault would be attempted. During that aſſault, 100 Frenchmen, with a general at their head, ſucceeded in penetrating as far as the court-yard of the governor's houſe. They were, to a man, cut off by the Engliſh. The breach was fifty feet wide, and in it fell the flower of the French army. Certificates of good behaviour at the battle of Lodi, and on other occaſions, were found in the pockets of many of the ſlain. Sir Sidney writes, with reſpect to the garriſon, that the Turkiſh troops were at firſt ſtaggered by the tremendous fire of the enemy, but that they ſoon recovered from their terror, and behaved with the greateſt bravery. The garriſon ſuffered greatly by fatigue, it being conſtantly under arms. Monſ. Phillipeaux, of the engineers, who aſſiſted Sir Sidney Smith in eſcaping from the Temple, died of fatigue.

A letter from a young French officer, one of the party employed in demoliſhing the French intrenchments, ſtates, that previous to Buonaparte's retreat, he made a twelfth and very feeble attack; and that Sir Sidney had ſailed, in the Tigre, towards Joppa, in the hope of reducing it, and intercepting Buonaparte.

It is a curious circumſtance that the train of artillery employed in the defence of Acre was that intended for its reduction by Buonaparte, and that the one with which he endeavoured to reduce it was that ſent by the Grand Signior for its defence, but was intercepted by the French.

VIENNA, (Court Gazette,) *June* 20. According to the official report, received from Acre at Conſtantinople, from Ghezar Ghaza Ahmed Pacha, then governor of Saida and Syria, and likewiſe ſeraſkier or general in chief of all the troops in that country, Gen. Buonaparte entirely ceaſed ſince the beginning of May to fire upon the fortreſs, while the garriſon continued, by order of Ghezar Pacha, to harraſs the enemy day and night from the redoubt, before the city, and by ſeveral little ſorties.

On the 6th, a Turkiſh flotilla arrived in the road of Acre, with the auxiliary corps from the Porte, under Merabut Zade, Haſſan Beg, and Capigi Iſmael Beg, collected at Rhodus. They began that very night to land ſome troops and to reinforce the principal forts of Acre. The enemy, aware of this reinforcement, poured a terrible ſhower of balls from all their artillery upon the fortreſs during the ſame night; on the next day, while all the troops, newly diſembarked,

embarked, were juſt preparing for a general ſortie in concert with the garriſon, they attacked a tower called Aly Burgi, which they had burnt before. But all the French who penetrated there were ſo warmly received by the Muſſulmen, that, with the help of God, not one eſcaped the ſword, not to mention the great number killed by the well-directed fire of the artillery, and the diſcharge of muſquetry of the beſieged.

Only one Frenchman was kept alive till his depoſition was taken, from which it clearly appeared, that Buonaparte had artfully made his ſoldiers believe, "That he had invaded Egypt and Syria, with the previous knowledge and conſent of the Porte, in order to put an end to the government of the pretended rebellious beys in Egypt, and to that of Ghezar Pacha in Syria; adding, that the commanders of thoſe troops ſent apparently to relieve the ſaid Pacha, but in reality to aſſiſt him, Buonaparte, were in the ſecret, and would at the firſt approach of the French ſeize on and deliver his perſon to them, ſo that the fortreſs would certainly ſurrender, and perhaps without firing a ſingle ſhot."

The next evening, at eight o'clock, the enemy renewed their attack upon the ſame half-burnt tower, in hopes that the Turks would not be able to hold out, and from a deſire to revenge the diſgrace and loſs of the preceding day. But all the aſſailants were again cut in pieces by the brave defenders, and Buonaparte's hopes fruſtrated a ſecond time.

Deſperate from theſe repeatedly fruſtrated attempts, Buonaparte reſolved the next day upon a new ſtorm; but was, however, again beaten off, with great loſs to the French, for all who penetrated were cut in pieces.

The following days, till the 21ſt of May, the French general only annoyed both the fortreſs and its towers by a continual and very briſk fire of artillery. This induced all the troops in the fortreſs to a general ſally, in which an immenſe number of the French were partly cut to pieces, partly diſperſed, and, by the help of the Almighty, ſo completely defeated, that Buonaparte was forced to ſet fire to his own camp and baggage, and to retreat with the ſmall remains of his troops, under the cover of the night, to the environs of Jaffa. Ghezar Pacha ordered his cavalry to purſue the flying enemy, and diſpatched neceſſary inſtructions to ſeveral places, to cut off, if poſſible, or obſtruct, the road on which the French retreated. Meanwhile, the Seraſkier Pacha forwarded the heads of thirteen French generals and chiefs, and of about three hundred commiſſioned and non-commiſſioned officers, to the Porte, at Conſtantinople, where they arrived on the 12th of June, and were put up, the next day, agreeable to cuſtom, in front of the principal gate of the Grand Signior's palace, (Babi Humajum,) with an inſcription of the above event, publicly expoſed to the inhabitants of that city.

A pamphlet has juſt been publiſhed at Paris, under the following title, "Account of the Expedition to Egypt, with the Deſcription of ſeveral of the Monuments of that Country, by Charles Norry, member of the Philotechnique Society, and one of the architects of the expedition."—This little work is not only written by a perſon who accompanied the expedition through all the chances of the route, until the conqueſt of the country was completed, but who, poſſeſſing

poſſeſſing a cool judgment, views things as they are, and deſcribes them without diſguiſing them with ornaments. Citizen Norry, being one of the firſt of the men of ſcience who have returned from the expedition, was of courſe tormented with queſtions by all thoſe who, from motives of intereſt, whether public or private, turn their views towards Egypt. He has, therefore, very properly determined to reply to them all at once by publiſhing this pamphlet.

It may well be ſuppoſed that he relates many facts already known to the public, but C. Norry paſſes over them ſo rapidly that he is never tedious. It is frequently to be regretted that he has not been more minute in his details, but that would have made his pamphlet a volume, which he did not intend.

The object which would naturally attract the firſt attention of the architect was Pompey's Pillar, but which is with more reaſon attributed to Septimus Severus. This was the laſt monument which he examined before he returned to Europe. We ſhall quote the account which the author gives of the means by which he reached the ſummit of the column. "The few attempts which have been hitherto made to meaſure Pompey's Pillar, and the imperfect manner in which they have been related by different authors, induced Citizens Duertre, Protin, Lepere, and myſelf, to endeavour to take all its dimenſions. Citizen Dumanoir, the commandant of the port, whom we had engaged to furniſh us with ſome blocks and cordage from his ſhip, haſtened to ſecond our views. On the 14th Fructidor, we proceeded with an eſcort to the column. We began our operations, like ſome Engliſh travellers on a former occaſion, by ſetting off a paper kite of about four feet long, to which a ſecond cord was fixed, which was ſeized by one of us when the kite was above and beyond the capital of the column; by pulling this cord the kite was brought to the ground, and the firſt cord paſſed over the capital. This being done, a rope, ſufficient to bear more than the weight of a man, was fixed to one of the ends of the cord and ſubſtituted in its ſtead. A ſailor then aſcended to the top of the column. The firſt thing he did was to throw down a vane of plate-iron which had been placed upon it in 1789 by Fauvel, a French engineer. There was an inſcription on this vane, which ſtated the total height of the pillar to be 88 feet 9 inches. When the ſailor had made faſt the cordage to the volutes of the angles of the capital, and carefully attached to it ſome of the ſhip blocks, I ſeated myſelf on a little plank which was ſuſpended from this tackle, and was ſoon hoiſted up to the top of the pillar." The author then gives an account of the means that were taken to meaſure the height of the different parts of the pillar and its diameter. Several members of the committee of arts were preſent, the greater part of whom alſo aſcended. "There were ſix or ſeven of us," ſays Citizen Norry, "on this enormous capital." In another place he ſays, that the column is the moſt coloſſal that is known. He is not, however, ignorant that Trajan's pillar at Rome and the monument at London are much higher. It even appears, that the column of Pompey does not equal in height that which Catherine de Medicis erected at Paris in 1572, and which is ſtill to be ſeen in the corn-market; for it is 94 feet 8 inches high, while Citizen Norry, after the moſt exact meaſures, ſtates the Egyptian column to be 23 metres 73 centimes, or 88 feet 6 inches: but the column of Pompey is remarkable for its ſhaft, or the portion included between

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the baſe and the capital, which is formed of one entire piece of Theban granite, 2,048 metres or ſixty-ſix feet long. This extraordinary circumſtance has, perhaps, induced the author to uſe the expreſſion—"*the moſt coloſſal known.*" [The reader will obſerve that all the meaſures mentioned here are French.]

Our traveller is not ſo particular in his account of the pyramids. He however, performed, what has been found very difficult by all travellers. Notwithſtanding the great heat, which was about thirty degrees, we aſcended," ſays he, "the ſteps of the great pyramid, and in about thirty-five minutes we arrived at the top. Much fatigued, we ſeated ourſelves on the ſummit, and examined with curioſity, mingled with aſtoniſhment, on one ſide the immenſe deſerts, bounded only by the horizon, on the other the Nile flowing through extenſive and ſmiling plains; beyond theſe the rugged mountains of Mokattam ſtretching towards the Red Sea: in the diſtance the pyramids of Saccara, ſituated in the plain of the Mummies, in the front of the ancient Memphis, and in the fore-ground the head of Lake Mœris."—It is unfortunate that in all excurſions to examine the curioſities of Egypt, it is always neceſſary to be accompanied by an eſcort, as a ſecurity againſt the attacks of the Bedouin Arabs—that independent race of men, whom no government has been able to ſubdue, and who fly to the ſandy deſerts whenever they are ſubdued. Citizen Norry, who calculates the total number of theſe Arabs in Egypt at thirty or 40,000, thinks it would be poſſible to civilize the greater part of them, and to ſubdue the reſt by engroſſing entirely the trade in ſulphur, which is all imported. They would then no longer be able to procure powder, and from the moment that they ſhould ceaſe to attack with advantage they would be deprived of their principal reſource, which is pillage.

The teſtimony of Citizen Norry accords with that of the lateſt travellers, with regard to the women who are in the harams of the rich men of the country.

"We had occaſion," ſays he, "to ſee ſome of theſe women, not in the houſes of the Turks, but in thoſe of our generals, who had collected them, after the flight of the beys: theſe beauties, ſo much celebrated, are almoſt all exceſſively fat, deſtitute of elegance, grace, and all freedom of carriage.

"The caravan of Abyſſinia had juſt arrived; it brought young black ſlaves to be ſold in the Bazards, deſtined for this barbarous commerce. We went to ſee theſe unfortunate creatures, who were lying naked on the ground. They were employed in bruiſing a little corn with ſtones, in order to make cakes. Several Frenchmen bought ſome of theſe blacks; but General Buonaparte iſſued a proclamation, prohibiting the purchaſers to ſell them again."

The following is the deſcription which the author gives of the banks of the Nile, when he ſailed down that river to Alexandria, on the 29th of Vendemiaire: "I enjoyed the delightful pleaſure of admiring the banks of this river, the waters of which, at this time, began to decreaſe. I remarked the inhabitants of the villages, who aſſembled on each ſide, examined us with much curioſity as we paſſed. Hundreds of young girls were employed in filling large vaſes with water, which they carried on their heads: before they entered the river, they tucked up all their clothes to their middle, but took great care to conceal their faces. Sometimes they ſwam acroſs the

river, putting all their clothes, which are few and light, round their heads in the form of a turban. The husbandmen tilled the ground with ploughs of the simplest structure, drawn by oxen :—Young men entirely naked strewed the grain along the furrows—herds of the finest cows and buffaloes, and flocks of black and white sheep with the richest fleeces, and with horns twisted like the cornu ammonis, grazed in the meadows."

The following is a copy of Sir Sidney Smith's correspondence on the subject of the siege of Acre.—To Rear-admiral Blanket, commanding his majesty's ships in the Red Sea, and to J. Wilson, Esq. agent to the Hon. East-India company, appointed by the governor and council of Bombay, dated Tigre, St. Jean d'Acre Bay, May 16, 1799.

Your letter of the 27th February, from Judda, announcing your mission from the hon. governor in council of Bombay, has reached me here.

Buonaparte, finding his popularity and his resources to diminish in Egypt, made an incursion into Syria, in hopes to make himself master of the treasure amassed by Gezar Pacha, and having taken Gaza and Jaffa, after a feeble resistance, advanced to this town, which he laid siege to on the 18th of March last. The Pacha having sent me timely information of his approach, I hastened to this anchorage, and arrived before the French army had time enough to put the place in a state of defence to resist Europeans.—I was enabled to furnish Gezar Pacha with heavy guns and ammunition, without dismantling the ships, having the good fortune to intercept Buonaparte's battering train of artillery on-board his flotilla from Alexandria and Damietta, the whole of which, to the number of eight sail, while they were a great loss to the enemy, afforded us the most effectual means of annoying them in their approaches. The town standing on a rectangular point of land, in the form of a square, of which, two sides are washed by the sea, his majesty's ships could likewise afford the protection of their guns to the garrison, and to the working parties detached from them, to throw up two ravelins, which taking the enemy's nearest approaches in flank, have considerably impeded his operations. It would be endless to enter into the detail of the events of this most singular siege ; suffice it to say, we have been within a stone's throw of each other for near two months. The enemy having very early made a lodgment on the crown of the glacis, and mined the tower, forming the inland angle of the town wall (which is composed of curtains and square towers, after the manner of the 12th century), Buonaparte having transported cannon from Jaffa, and effectuated a breach the 14th day of the siege, attempted to storm, and was repulsed ; since which he has made no less than eleven desperate attempts to carry the place by assault, in each of which he has been unsuccessful, and obliged to retire with the loss of the flower of his army, and eight general officers killed and wounded.

The army, totally dispirited and worn down with fatigue and disease, refused to mount the breach any more over the putrid bodies of their companions ; they were consequently paraded yesterday, and furnished with shoes and water-gourds to enable them to cross the desert again. My emissaries in the French camp inform me that Suez is mentioned there as the object of Buonaparte's speculation,

though without any hopes of a diſguſted, diminiſhed, and exhauſted, army, ever reaching it, at leaſt in a ſtate to act offenſively. It is, however, my duty to notify this poſſible intention to you for your government. I am taking meaſures to cauſe an active and harraſſing purſuit.

I truſt to hearing from you by all poſſible opportunities through Egypt, as well as by way of Aleppo. I ſhall of courſe endeavour to keep you informed of what paſſes on this ſide the iſthmus.

JOFFA, *May* 30.—I wrote to you *via* Aleppo, on the 16th inſtant. I am enabled to ſend this duplicate of my letter by the good offices of Iſmael, pacha of Jeruſalem, whom I have the ſatisfaction on of joining here, in the purſuit of Buonaparte's beaten and retreating army. He was obliged to raiſe the ſiege of Acre on the 20th: knowing his intentions as above-mentioned, I preceded his van column as far as Gaza, in his march along the beach, and harraſſed it where it turned inland, but not unmoleſted by the Arabs. The pride of the vanquiſhed ci-devant conqueror not allowing him to make the natural overture in favour of his wounded, after having cloſed all intercourſe by an inſolent letter to me, for fear of the conſequences of the general defection of his army, he carried theſe poor wretches to this place by land, where it being found impracticable to carry the worſt of them farther, they were embarked onboard all the veſſels to be found here, together with his twelve and eight pounders cannon and howitzers, which were found too heavy for land-carriage in the ſand. Theſe veſſels were ſent to ſea, to proceed to Damietta, without water, proviſions, or ſeamen to navigate them, which I muſt attribute to precipitation and want of arrangement, rather than any thing elſe. Be this as it may, thoſe poor wretches who could move, decided to ſteer ſtrait for us, in perfect confidence of our affording them the good offices of humanity, in which they were not diſappointed. We are thus put in poſſeſſion of the twelve-pounders by which the firſt breach was made; as to the twenty-four, eighteen, and mortars, which made the laſt, they lay ſcattered along the road with the dead and dying, the whole way between Acre and this place. The remnant of this mighty hoſt is creeping towards the confines of Egypt, in ſuch a ſtate, that, if the grand army could but come up with them, they would fall an eaſy prey. Buonaparte truſts to meeting reinforcements from Grand Cairo; but I have, I hope, found occupation for the portion of his army left there; ſo that whatever part of his force reaches Suez, it cannot be formidable to India. Be pleaſed to forward a duplicate of this letter to Captain Wilſon, at Judda, for the information of the government in India. W. S. SMITH.

This ſingular concatenation of circumſtances which have brought Buonaparte and Sir Sidney Smith as it were in contact, renders every former intercourſe between them an object of more than common curioſity. When Sir Sidney was in the priſon of the Temple, he drew up a ſtate of his caſe, which was handed to Buonaparte, on his arrival at Paris, by Madame Tallien, in the preſence of Gen. Kilmaine, and ſome other officers.—Buonaparte expreſſed a ſtrong ſenſe of the hardſhips ſuſtained by Sir Sidney, whoſe caſe, he ſaid was not diſtinguiſhable from that of any other priſoner of war. Had he been his priſoner, Buonaparte ſaid, he ſhould certainly claim him of the directory; but, as the matter ſtood, he ſaw no way in which

he could possibly interfere. The fact was, that the redoubted general was afraid of the suspicion of British gold and British influence, which was then the hacknied cry, and he therefore basely declined to do that which his sense of right must have justified.

Copy of a Letter from Sir William Sidney Smith, Knt. Captain of his Majesty's Ship Tigre, to Evan Nepean, Esq. dated Acre, May 3.

Sir, I have the honour to enclose you copies of my letters to Earl St. Vincent, of the 7th of April and 2d inst. for the information of my lords commissioners of the admiralty; as also a sketch of the position of the forces. The enemy have made two attempts since yesterday morning to force the two English ravelines, but were repulsed with loss. The works have now cannon mounted on them, and are nearly completed. We have thus the satisfaction of finding ourselves, on the 46th day of the siege, in a better state of defence than we were the first day the enemy opened their trenches, notwithstanding the increase of the breach which they continue to batter with effect; and the garrison, having occasionally closed with the enemy in several sorties, feel greater confidence that they shall be able to resist an assault, for which they are prepared.

April 7. I have the honour to inform your lordship, that as soon as the return of fine weather, after the equinoctial gale, allowed me to approach this unsheltered anchorage, I resumed my station in the bay with the squadron under my orders. I found the enemy had profited, by our forced absence, to push their approaches to the counterscarp, and even into the ditch of the north east angle of the town-wall, where they were employed in mining the tower, to increase a breach they had already made in it, and which had been found impracticable when they attempted to storm on the 1st inst. The Alliance and Prize gun-boats, which had been caught in the gale, had fortunately rode it out except one; and Captain Wilmot had been so indefatigable in mounting the Prize guns, under the direction of an able officer of engineers, Colonel Phelipeaux, that the fire therefrom had already slackened that of the enemy; still, however, much was to be apprehended from the effect of the mine, and a sortie was determined on, in which the British marines and seamen were to force their way into it, while the Turkish troops attacked the enemy's trenches on the right and left. The sally took place this morning just before day-light; the impetuosity and noise of the Turks rendered the attempt to surprise the enemy abortive, though in other respects they did their part well. Lieut. Wright, who commanded the seamen-pioneers, notwithstanding he received two shot in his right arm as he advanced, entered the mine with the pikemen, and proceeded to the bottom of it, where he verified its direction, and destroyed all that could be destroyed in its then state, by pulling down the supporters. Colonel Douglas, to whom I had given the necessary step of rank to enable him to command the Turkish colonels, supported the seamen in this desperate service with his usual gallantry, under the increased fire of the enemy, bringing off Lieutenant Wright, who had scarcely strength left to get out of the enemy's trench, from which they were not dislodged, as also Mr. Janverin, midshipman of the Tigre, and the rest of the wounded. The action, altogether, speaks for itself, and says more than could be said by me in praise of all concerned. I feel doubly indebted to Colonel Douglas for having preserved my gallant friend

Lieutenant

Lieutenant Wright, whoſe life, I am happy to ſay, is not deſpaired of by the ſurgeon; we have however to lament the loſs of a brave and tried officer, Major Oldfield, who commanded the Theſeus's marines, and fell glorioufly on this occaſion, with two of the men under his command. Our loſs in wounded is twenty-three, among which is Lieutenant Beatty, of the marines, ſlightly.—The Turks brought in above ſixty heads, a greater number of muſkets, and ſome intrenching tools, much wanted in the garriſon. A farther attack on the enemy's ſecond parallel was not to be attempted without a greater number of regular troops. The return of the detachment was well covered by the Theſeus's fire, Captain Miller having taken an excellent poſition to that effect.

The reſult of our day's work is, that we have taught the beſiegers to reſpect the enemy they have to deal with, ſo as to keep at a greater diſtance. The apprehenſions of the garriſon are quieted as to the effect of the mine, which we have beſides learnt how to countermine with advantage.

MAY 2. The enemy continue to make the moſt vigorous efforts to overcome our reſiſtance in the defence of this place. The garriſon has made occaſional ſorties protected by our ſmall boats on their flank with field-pieces, in which the moſt eſſential ſervice has been performed by Lieutenant Brodie and Mr. Atkinſon of the Theſeus, and Mr. Jones, maſter of the Tigre, who commanded them.

Yeſterday the enemy, after many hours heavy cannonade from thirty pieces of artillery brought from Jaffa, made a fourth attempt to mount the breach, now much widened; but were repulſed with loſs. The Tigre moored on one ſide and the Theſeus on the other flank the town walls; the gun-boats, launches, and other rowing boats, continue to flank the enemy's trenches to their great annoyance. Nothing but deſperation can induce them to make the ſort of attempts they do to mount a breach practicable only by the means of ſcaling ladders, under ſuch a fire as we pour in upon them; and it is impoſſible to ſee the lives even of our enemies thus ſacrificed, and ſo much bravery miſapplied, without regret. Captain Wilmot was ſhot on the 8th ult. by a rifleman, as he was mounting a howitzer on the breach: his loſs is ſeverely felt.

We have run out a ravelin on each ſide of the enemy's neareſt approach, in which the marines of the Tigre and Theſeus have worked under a heavy and inceſſant fire from the enemy in a way that commands the admiration and gratitude of the Turks, as it is evident the flanking fire produced from them contributed much to ſave the place yeſterday. Colonel Phelipeaux, of the engineers, who projected and ſuperintended the execution, has fallen a ſacrifice to his zeal for this ſervice; want of reſt, and expoſure to the ſun, gave him a fever, of which he died this morning. Colonel Douglas ſupplies his place, having hitherto carried on the work under his direction, and is indefatigable in completing it for the reception of the cannon. I muſt not omit to mention, to the credit of the Turks, that they fetch the gabions, faſcines, and thoſe materials which the garriſon does not afford, from the face of the enemy's works, ſetting fire to what they cannot bring away. The enemy repair in one night all the miſchief we do them in the day, and continue within half piſtol-ſhot of the walls, in ſpite of the conſtant fire kept up from the ramparts.

W. SIDNEY SMITH.

An over-land diſpatch from Conſtantinople, dated June 9, confirms the farther and entire defeat of Buonaparte before the walls of Acre: he loſt ſix thouſand men, including two hundred and eighty officers, with all his artillery, tents, &c. The loſs of the Turks is ſtated at two thouſand killed, and upwards of ſeven hundred wounded; that of the Engliſh at 100 killed and died by ſickneſs and fatigue. Letters from Conſtantinople, by way of Hamburgh, mention, that the French general Kleber, in an attempt to obey the orders of Buonaparte, had been ſurrounded in the mountains of Syria, and nearly cut to pieces. The ſame letters mention ſome farther particulars reſpecting the accident on-board the Theſeus, of 74 guns, off Acre; by which it appears, that a young midſhipman, playing on the quarter-deck, ſet fire to a ſhell, which communicating to others, a dreadful exploſion took place, which brought Capt. Miller from his cabin at the inſtant of a ſecond exploſion, when a piece of ſhell penetrated his breaſt, and killed him on the ſpot: the fire by this time communicating to other ſhells, they likewiſe burſt; eighty perſons were killed or wounded by the different exploſions.

CONSTANTINOPLE, *July* 25. For ſeveral weeks paſt we have had no advices reſpecting General Buonaparte. It is thought he has fought his way through the deſerts with the handful of men that remained from the expedition in Egypt, conſiſting of 1500 men at the utmoſt. Some accounts ſay, that he is ſtill in the burning ſandy deſert, where, having recruited a corps of 1200 men, of different nations, he wanted to get back to Egypt, where preparations are making by Murad Bey, who is ſtationed with a conſiderable force on this ſide of Cairo, to endeavour to cut him off from his army, while the Engliſh will ſupport the operations by ſea. The major part of the Turkiſh fleet had, according to the lateſt advices, not left Corfu.

General Buonaparte has ſent a declaration to the Grand Signior, in which he attempts to juſtify his conduct, alleging, that he had only acted according to the orders of the late directory; but, the preſent government having recalled all the French from Egypt, he was ready to take his department for France, if the neceſſary paſſports and proper eſcort were granted him. The Grand Signior ſent him anſwer, that he would never forget the injury done him by the French government by Buonaparte's invaſion, and that he left the latter and his troops to their fate, while, on the other hand, a conſiderable Turkiſh army was ordered againſt France, by way of repriſals.

Private letters received in London September 4, ſtate, that Buonaparte had made good his retreat into Egypt, and had arrived at Cairo.

DESCRIPTION OF AMERICAN WHITE-WASHING.

Written in the Character of a Gentleman who correſponds with his Friend in England.—By Dr. FRANKLIN.

SIR, My wiſh is to give you ſome account of the people of theſe new ſtates, but I am far from being qualified for the purpoſe, having as yet ſeen little more than the cities of New York and Philadelphia. I have diſcovered but few national ſingularities among them. Their cuſtoms and manners are nearly the ſame with thoſe of England, which they have long been uſed to copy. For, previous

vious to the revolution, the Americans were from their infancy taught to look up to the Engliſh as patterns of perfection in all things. I have obſerved, however, one cuſtom, which, for aught I know, is peculiar to this country. An account of it will ſerve to fill up the remainder of this ſheet, and may afford you ſome amuſement.

When a young couple are about to enter into the matrimonial ſtate, a never-failing article in the marriage-treaty is, that the lady ſhall have and enjoy the free and unmoleſted exercile of the rights of *white-waſhing*, with all its ceremonials, privileges, and appurtenances. A young woman would forego the moſt advantageous connection, and even diſappoint the warmeſt wiſh of her heart, rather than reſign the invaluable right. You will wonder what this privilege of *white-waſhing* is: I will endeavour to give you ſome idea of the ceremony, as I have ſeen it performed.

There is no ſeaſon of the year in which the lady may not claim her privilege, if ſhe pleaſes; but the latter end of May is moſt generally fixed upon for the purpoſe. The attentive huſband may judge by certain prognoſtics when the ſtorm is nigh at hand. When the lady is unuſually fretful, finds fault with the ſervants, is diſcontented with the children, and complains much of the filthineſs of every thing about her—theſe are ſigns which ought not to be neglected; yet they are not deciſive, as they ſometimes come on and go off again, without producing any farther effect. But if, when the huſband riſes in the morning, he ſhould obſerve in the yard a wheel-barrow with a quantity of lime in it, or ſhould ſee certain buckets with lime diſſolved in water, there is then no time to be loſt: he immediately locks up the apartment or cloſet where his papers or his private property are kept, and, putting the key in his pocket, betakes himſelf to flight; for a huſband, however beloved, becomes a perfect nuiſance during this ſeaſon of female rage: his authority is ſuperſeded, his commiſſion is ſuſpended, and the very ſcullion who cleans the braſſes in the kitchen becomes of more conſideration and importance than him. He has no reſource but to abdicate, and run from an evil which he can neither prevent nor mollify.

The huſband gone, the ceremony begins. The walls are in a few minutes ſtripped of their furniture; paintings, prints, and looking-glaſſes, lie in a huddled heap about the floors; the curtains are torn from the teſters, the beds crammed into the windows; chairs and tables, bedſteads and cradles, crowd the yard; and the garden-fence bends beneath the weight of carpets, blankets, cloth cloaks, old coats, and ragged breeches. Here may be ſeen the lumber of the kitchen, forming a dark and confuſed maſs: for the foreground of the picture, gridirons and frying pans, ruſty ſhovels and broken tongs, ſpits and pots, joint-ſtools, and the fractured remains of ruſh-bottomed chairs. There a cloſet has diſgorged its bowels, cracked tumblers, broken wine-glaſſes, phials of forgotten phyſic, of unknown powders, ſeeds and dried herbs, handfuls of old corks, tops of teapots, and ſtoppers of departed decanters;—from the rag-hole in the garret to the rat-hole in the cellar, no place eſcapes unrummaged. It would ſeem as if the day of general doom was come, and the utenſils of the houſe were dragged forth to judgment.

This ceremony completed, and the houſe thoroughly evacuated, the next operation is to ſmear the walls and ceilings of every room and cloſet with bruſhes dipped in a ſolution of lime, called *white-*

waſh;

waſh; to pour buckets of water over every floor, and ſcratch all the partitions and wainſcoats with rough bruſhes wet with ſoap-ſuds, and dipped in ſtone-cutters ſand. The windows by no means eſcape the general deluge. A ſervant ſcrambles out upon the pent-houſe, at the riſk of her neck, and with a mug in her hand, and a bucket within reach, ſhe daſhes away innumerable gallons of water againſt the glaſs panes; to the great annoyance of the paſſengers in the ſtreet.—I have been told that an action at law was once brought againſt one of theſe water nymphs, by a perſon who had a new ſuit of clothes ſpoiled by this operation; but, after long argument, it was determined by the whole court, that the action would not lie, in as much as the defendant was in the exerciſe of a legal right, and not anſwerable for the conſequences; and ſo the poor gentleman was doubly non-ſuited; for he loſt not only his ſuit of clothes, but his ſuit at law.

Theſe ſmearings and ſcratchings, waſhings and daſhings, being duly performed, the next ceremonial is to cleanſe and replace the diſtracted furniture. You may have ſeen a houſe-raiſing, or a ſhip-launch, when all the hands within reach are collected together: recollect, if you can, the hurry, buſtle, confuſion, and noiſe, of ſuch a ſcene, and you will have ſome idea of this cleaning match. The misfortune is, that the ſole object is to make things clean; it matters not how many uſeful, ornamental, or valuable, articles are mutilated, or ſuffer death under the operation: a mahogany chair and carved frame undergo the ſame diſcipline; they are to be made *clean* at all events; but their preſervation is not worthy of attention. For inſtance, a fine large engraving is ſaid flat upon the floor; ſmaller prints are piled upon it, and the ſuperincumbent weight cracks the glaſſes of the lower tier: but this is of no conſequence. A valuable picture is placed leaning againſt the ſharp corner of a table; others are made to lean againſt that, until the preſſure of the whole forces the corner of the table through the canvas of the firſt. The frame and glaſs of a fine print are to be *cleaned*; the ſpirit and oil uſed on this occaſion are ſuffered to leak through and ſpoil the engraving; no matter; if the glaſs is clean, and the frame ſhines, it is ſufficient; the reſt is not worthy of conſideration. An able arithmetician has made an accurate calculation, founded on long experience, and has diſcovered, that the loſſes and deſtruction incident to two white-waſhings are equal to one removal, and three removals equal to one fire.

The cleaning frolic over, matters begin to reſume their priſtine appearance. The ſtorm abates, and all would be well again, but it is impoſſible that ſo great a convulſion, in ſo ſmall a community, ſhould not produce ſome farther effects. For two or three weeks after the operation, the family are uſually afflicted with ſore throats or ſore eyes, occaſioned by the cauſtic quality of the lime; or with ſevere colds from the exhalations of wet floors or damp walls.

I know a gentleman, who was fond of accounting for every thing in a philoſophical way. He conſiders this, which I have called a cuſtom, as a real periodical diſeaſe, peculiar to the climate. His train of reaſoning is ingenious and whimſical; but I am not at leiſure to give you a detail. The reſult was, that he found the diſtemper to be incurable; but after much ſtudy he conceived he had diſcovered a method to divert the evil he could not ſubdue.

For

For this purpoſe, he cauſed a ſmall building, about twelve feet ſquare, to be erected in his garden, and furniſhed with ſome ordinary chairs and tables; and a few prints of the cheapeſt ſort were hung againſt the walls. His hope was, that, when the white-waſhing frenzy ſeized the females of his family, they might repair to this apartment, and ſcrub and ſcour, and ſmear to their heart's content; and ſo ſpend the violence of the diſeaſe in this outpoſt, while he enjoyed himſelf in quiet at head-quarters. But the experiment did not anſwer his expectation; it was impoſſible it ſhould, ſince a principal part of the gratification conſiſts in the lady's having an uncontrouled right to torment her huſband at leaſt once a-year, and to turn him out of doors, and take the reins of government into her own hands.

There is a much better contrivance than this of the philoſopher's, which is, to cover the walls of the houſe with paper; this is now generally done; and, though it cannot aboliſh, it at leaſt ſhortens the period of female dominion. The paper is decorated with flowers of various fancies, and made ſo ornamental, that the women have admitted the faſhion, without perceiving the deſign.

There is alſo another alleviation of the huſband's diſtreſs; he generally has the privilege of a ſmall room or cloſet for his books and papers, the key of which he is allowed keep. This is conſidered as a privileged place, and ſtands like the land of Goſhen amid the plagues of Egypt. But then he muſt be extremely cautious, and ever on his guard. For, ſhould he inadvertently go abroad and leave the key in his door, the houſe-maid, who is always on the watch for ſuch an opportunity, immediately enters in triumph with buckets, brooms, and bruſhes; takes poſſeſſion of the premiſes, and forthwith puts all his books and papers *to rights*; to his utter confuſion, and ſometimes ſerious detriment. For inſtance:

A gentleman was ſued by the executors of a tradeſman, on a charge found againſt him in the deceaſed's books to the amount of thirty pounds. The defendant was ſtrongly impreſſed with an idea that he had diſcharged the debt and taken a receipt; but, as the tranſaction was of long ſtanding, he knew not where to find the receipt. The ſuit went on in courſe, and the time approached when judgment would be obtained againſt him. He than ſat ſeriouſly down to examine a large bundle of old papers, which he had untied and diſplayed on a table for that purpoſe. In the midſt of his ſearch, he was ſuddenly called away on buſineſs of importance; he forgot to lock the door of his room. The houſemaid, who had been long looking out for ſuch an opportunity, immediately entered with the uſual implements, and with great alacrity fell to cleaning the room, and putting things *to rights*. The firſt object that ſtruck her eye was the confuſed ſituation of the papers on the table; theſe were without delay bundled together, like ſo many dirty knives and forks; but in the action a ſmall piece of paper fell unnoticed on the floor, which happened to be the very receipt in queſtion; as it had no very reſpectable appearance, it was ſoon after ſwept out with the common dirt of the room, and carried in a rubbiſh pan to the yard. The tradeſman had neglected to enter the credit in his book; the defendant could find nothing to obviate the charge, and ſo judgment went againſt him for the debt and coſts. A fortnight after

the whole was ſettled, and the money paid, one of the children found the receipt among the rubbiſh in the yard.

There is alſo another cuſtom peculiar to the city of Philadelphia, and nearly allied to the former. I mean that of waſhing the pavement before the doors every Saturday evening. I at firſt took this to be a regulation of the police; but on farther inquiry find it is a religious rite, preparatory to the ſabbath; and is, I believe, the only religious rite in which the numerous ſectaries of this city perfectly agree. The ceremony begins about ſun-ſet, and continues till about ten or eleven at night. It is very difficult for a ſtranger to walk the ſtreets on thoſe evenings; he runs a continual riſk of having a bucket of dirty water thrown againſt his legs; but a Philadelphian born is ſo much accuſtomed to the danger, that he avoids it with ſurpriſing dexterity.

It is from this circumſtance that a Philadelphian may be known any where by his gait. The ſtreets of New York are paved with rough ſtones; theſe indeed are not waſhed, but the dirt is ſo thoroughly ſwept from before the doors, that the ſtones ſtand up ſharp and prominent, to the great inconvenience of thoſe who are not accuſtomed to ſo rough a path. But habit reconciles every thing. It is diverting enough to ſee a Philadelphian at New York; he walks the ſtreets with as much painful caution, as if his toes were covered with corns, or his feet lamed with the gout; while a New Yorker, as little approving the plain maſonry of Philadelphia, ſhuffles along the pavement like a parrot on a mahogany table.

It muſt be acknowledged, that the ablutions I have mentioned are attended with no ſmall inconvenience; but the women would not be induced, from any conſideration, to reſign their privilege. Notwithſtanding this, I can give you the ſtrongeſt aſſurances, that the women of America make the moſt faithful wives, and the moſt attentive mothers in the world; and I am ſure you will join me in opinion, that, if a married man is made miſerable only *one* week in a whole year, he will have no great cauſe to complain of the matrimonial bond. I am, &c.

Anſwer to the Above, in the Character of a Lady.—By the SAME.

SIR, I have lately ſeen a letter upon the ſubject of *white-waſhing*, in which that neceſſary duty of a good houſe-wife is treated with unmerited ridicule. I ſhould probably have forgot the fooliſh thing by this time; but, the ſeaſon coming on which moſt women think ſuitable for cleanſing their apartments from the ſmoke and dirt of the winter, I find this ſaucy author diſhed up in every family, and his flippant performance quoted wherever a wife attempts to exerciſe her reaſonable prerogative, or execute the duties of her ſtation. Women generally employ their time to better purpoſe than ſcribbling. The cares and comforts of a family reſt principally upon their ſhoulders; hence it is that there are but few female authors; and the men, knowing how neceſſary our attentions are to their happineſs, take every opportunity of diſcouraging literary accompliſhments in the fair ſex. You hear it echoed from every quarter, —"My wife cannot make verſes, it is true; but ſhe makes an excellent pudding; ſhe can't correct the preſs, but ſhe can correct her children, and ſcold her ſervants, with admirable diſcretion; ſhe can't unravel the intricacies of political economy and federal government; but ſhe can knit charming ſtockings." And this they call

call praiſing a wife, and doing juſtice to her character, with much nonſenſe of the like kind.

I ſay, women generally employ their time to much better purpoſe than ſcribbling; otherwiſe this facetious writer had not gone ſo long unanſwered. We have ladies who ſometimes lay down the needle, and take up the pen; I wonder none of them have attempted ſome reply. For my part, I do not pretend to be an author; I never appeared in print in my life; but I can no longer forbear ſaying ſomething in anſwer to ſuch impertinence, circulate how it may.

Only, ſir, conſider our ſituation. Men are naturally inattentive to the decencies of life; but why ſhould I be ſo complaiſant? I ſay they are naturally filthy creatures. If it were not that their connection with the refined ſex poliſhed their manners, and had a happy influence in the economy of life, theſe lords of the creation would wallow in filth, and populous cities would infect the atmoſphere with their noxious vapours. It is the attention and aſſiduity of the women that prevent men from degenerating into mere ſwine. How important then are the ſervices we render; and yet for theſe very ſervices we are made the ſubject of ridicule and fun. Baſe ingratitude! Nauſeous creatures! Perhaps you may think I am in a paſſion. No, ſir, I do aſſure you I never was more compoſed in my life; and yet it is enough to provoke a ſaint to ſee how unreaſonably we are treated by the men. Why now, there's my huſband—a good-enough ſort of a man in the main—but I will give you a ſample of him.

He comes into the parlour the other day, where to be ſure I was cutting up a piece of linen. Lord! ſays he, what a flutter is here! I can't bear to ſee the parlour look like a taylor's ſhop; beſides, I am going to make ſome important philoſophical experiments, and muſt have ſufficient room. You muſt know my huſband is one of your would-be philoſophers. Well, I bundled up my linen as quick as I could, and began to darn a pair of ruffles, which took up no room, and could give no offence. I thought, however, I would watch my lord and maſter's important buſineſs. In about half an hour the tables were covered with all manner of trumpery; bottles of water, phials of drugs, paſteboard, paper and cards, glue, paſte, and gum-arabic; files, knives, ſciſſars, and needles; roſin, wax, ſilk, thread, rags, jags, tags, books, pamphlets, and papers. Lord bleſs me! I am almoſt out of breath, and yet I have not enumerated half the articles; well, to work he went, and, although I did not underſtand the object of his manœuvres, yet I could ſufficiently diſcover that he did not ſucceed in any one operation. I was glad of that, I confeſs, and with good reaſon too; for, after he had fatigued himſelf with miſchief, like a monkey in a china ſhop, and had called the ſervants to clear every thing away, I took a view of the ſcene my parlour exhibited. I ſhall not even attempt a minute deſcription; ſuffice it to ſay, that he had overſet his ink-ſtand, and ſtained my beſt mahogany table with ink; he had ſpilt a quantity of vitriol, and burnt a large hole in my carpet; my marble hearth was all over ſpotted with melted roſin: beſides this, he had broken three china cups, four wine-glaſſes, two tumblers, and one of my handſomeſt decanters. And, after all, as I ſaid before, I perceived that he had not ſucceeded in any one operation. By the bye, tell your friend, the white-waſh ſcribbler, that this is one means by

which our clofets become furnifhed with "halves of china-bowls, cracked tumblers, broken wine glaffes tops of tea-pots, and ftoppers of departed decanters." I fay, I took a view of the dirt and devaftation my philofophic hufband had occafioned; and there I fat, like Patience on a monument, fmiling at grief; but it worked inwardly. I would almoft as foon the melted rofin and vitriol had been in his throat, as on my dear marble hearth and my beautiful carpet. It is not true that women have no power over their own feelings; for notwithftanding this provocation, I faid nothing, or next to nothing: for I only obferved, very pleafantly, what a lady of my acquaintance had told me, that the reafon why philofophers are called *literary* men, is becaufe they make a great *litter*; not a word more; however, the fervant cleared away, and down fat the philofopher. A friend dropt in foon after—Your fervant, fir, how do you do? "O Lord! I am almoft fatigued to death; I have been all the morning making philofophical experiments." I was now more hardly put to it to fmother a laugh, than I had been juft before to contain my rage; my *precious* went out foon after, and I, as you may fuppofe, muftered all my forces; brufhes, buckets, foap, fand, limeftkins, and cocoa-nut-fhells, with all the powers of houfewifery, were immediately employed. I was certainly the beft philofopher of the two; for my experiments fucceeded, and his did not. All was well again, except my poor carpet—my vitriolized carpet, which ftill continued a mournful memento of philofophic fury, or rather philofophic folly. This operation was fcarcely over, when in came my experimental philofopher, and told me, with all the indifference in the world, that he had invited fix gentlemen to dine with him at three o'clock. It was then paft one. I complained of the fhort notice; Poh! poh! faid he, you can get a leg of mutton, and a loin of veal, and a few potatoes, which will do well enough. Heavens, what a chaos muft the head of a philofopher be! a leg of mutton, a loin of veal, and potatoes! I was at a lofs whether I fhould laugh or be angry; but there was no time for determining; I had but an hour and a half to do a world of bufinefs in.—My carpet, which had fuffered in the caufe of experimental philofophy in the morning, was deftined to be moft fhamefully difhonoured in the afternoon by a deluge of nafty tobacco-juice. Gentlemen fmokers love fegars [tobacco rolled up in a particular form] better than carpets. Think, fir, what a woman muft endure under fuch circumftances; and then, after all, to be reproached with her cleanlinefs, and to have her white-waftings, her fcourings, and her fcrubbings, made the fubject of ridicule, it is more than patience can put up with. What I have now exhibited is but a fmall fpecimen of the injuries we fuftain from the boafted fuperiority of men. But we will not be laughed out of our cleanlinefs. A woman would rather be called any thing than a flut, as a man would rather be thought a knave than a fool.

I had a great deal more to fay, but I am called away; we are juft preparing to white-wafh, and of courfe I have a deal of bufinefs on my hands. The white-wafh buckets are paraded, the brufhes are ready, and my hufband is gone off—fo much the better: when one is about a thorough cleaning, the firft dirty thing to be removed is one's hufband. I am called for again. Adieu.

Of the BULL-FIGHTS in SPAIN and PORTUGAL.

THE bull-fights are much in vogue amongſt the Spaniards and Portugueſe. They conſiſt of a kind of combat of a cavalier againſt a wild bull, either on foot, or on horſeback by riding at him with a lance. The Spaniards have theſe bull-fights in honour of St. John, the Virgin Mary, &c. This ſport the Spaniards received from the Moors, among whom it was celebrated with great eclat. Some think that the Moors received the cuſtom from the Romans, and they from the Greeks; Dr. Plot is of opinion, that the Theſſalians firſt inſtituted this game, that Julius Cæſar learned it of them and brought it to Rome, and that this was the origin of the Spaniſh and Portugueſe bull-fighting, and of the Engliſh bull-running.—The practice was prohibited by Pope Pius V. under pain of excommunication; but ſucceeding popes granted ſeveral mitigations.

From the following account of a bull-feaſt in the Coliſeum at Rome, in 1332, extracted from Muratori by Mr. Gibbon, the reader may form ſome idea of the pomp, the ceremony, and the danger, which attended theſe exhibitions. "A general proclamation as far as Rimini and Ravenna invited the nobles to exerciſe their ſkill and courage in this perilous adventure. The Roman ladies were marſhalled in three ſquadrons, and ſeated in three balconies, which on this day, the 3d of September, were lined with ſcarlet cloth. The fair Jacova de Rovere led the matrons from beyond the Tiber, a pure and native race, who ſtill repreſent the features and character of antiquity. The remainder of the city was divided between the Colonna and Urſina families: the two factions were proud of the number and beauty of their female bands: the charms of Savella Urſini are mentioned with praiſe; and the Colonna regretted the abſence of the youngeſt of their houſe, who had ſprained her ancle in the garden of Nero's tower. The lots of the champions were drawn by an old and reſpectable citizen; and they deſcended into the arena, to encounter the wild bulls on foot with a ſingle ſpear.—Amidſt the crowd, our annaliſt has ſelected the names, colours, and devices, of twenty of the moſt conſpicuous knights: ſeveral of the names are the moſt illuſtrious of Rome and the eccleſiaſtical ſtate; Malateſta, Polenta, Della Valle, Cafarello, Savelli, Cappoccio, Conti, Annibaldi, Altieri, Corſi. The colours were adapted to their taſte and ſituation; and the devices are expreſſive of hope or deſpair, and breathe the ſpirit of gallantry and arms. "I am alone, like the youngeſt of the Horatii," the confidence of an intrepid ſtranger: "I live diſconſolate," a weeping widower: "I burn under the aſhes," a diſcreet lover: "I adore Lavinia or Lucretia," the ambiguous declaration of a recent paſſion: "My faith is as pure," the motto of a white livery: "Who is ſtronger than myſelf?" of a lion's hide: "If I am drowned in blood, what a pleaſant death!" the wiſh of ferocious courage. The pride or prudence of the Urſini reſtrained them from the field, which was occupied by three of their hereditary rivals, whoſe inſcriptions denoted the loftyneſs of the Colonna name: "Though ſad, I am ſtrong:" "Strong as I am great:" "If I fall (addreſſing himſelf to the ſpectators), you fall with me:" intimating, (ſays the writer,) that, while the other families were the ſubjects of the Vatican, they alone were

were the ſupporters of the Capitol. The combats of the amphitheatre were dangerous and bloody. Every champion ſucceſſively encountered a wild bull; and the victory may be aſcribed to the quadrupeds, ſince no more than eleven were left on the field, with the loſs of nine wounded and eighteen killed on the ſide of their adverſaries. Some of the nobleſt families might mourn; but the pomp of the funerals, in the churches of St. John Lateran and St. Maria Maggiore, afforded a ſecond holiday to the people. Doubtleſs it was not in ſuch conflicts that the blood of the Romans ſhould have been ſhed; yet, in blaming their raſhneſs, we are compelled to applaud their gallantry; and the noble volunteers, who diſplay their magnificence and riſk their lives under the balconies of the fair, excite a more generous ſympathy than the thouſands of captives and malefactors who were reluctantly dragged to the ſcene of ſlaughter."

A ſtriking relic of this pagan feſtival is obſervable in the Spaniſh manners at the preſent day. Many Spaniards conſider this practice as the ſure means of preſerving that energy by which they are characteriſed, and of habituating them to violent emotions, which are terrible only to timid minds. But it ſeems difficult to comprehend what relation there is between bravery and a ſpectacle where the aſſiſtants now run no danger; where the actors prove, by the few accidents which befal them, that their's has nothing it in very intereſting; and where the unhappy victims meet only with certain death as the reward of their vigour and courage. Another proof that theſe ſpectacles have little or no influence on the diſpoſition of the mind is, that children, old men, and people of all ages, ſtations, and characters, aſſiſt at them; and yet their being accuſtomed to ſuch bloody entertainments appears neither to correct their timidity, nor alter the mildneſs of their manners.

Theſe bull-fights are very expenſive; but they bring great gain to the undertakers. The worſt places coſt two or four rials, according as they are in the ſun or the ſhade; the price of the higheſt is a dollar. When the prices of the horſes and bulls, and the wages of the *correadores*, or bull-fighters, have been paid out of this money, the reſt is generally appropriated to pious foundations; at Madrid, it forms one of the principal funds of the hoſpital. It is only during ſummer that theſe combats are exhibited, becauſe the ſeaſon then permits the ſpectators to ſit in the open air, and becauſe the bulls are then more vigorous. Thoſe which are of the beſt breed are condemned to this kind of ſacrifice; and connoiſſeurs are ſo well acquainted with their diſtinguiſhing marks, that, as ſoon as a bull appears upon the arena, they can mention the place where he was reared. This arena is a kind of circus ſurrounded with ſeats, riſing one above another; the higheſt of which only is covered. The boxes occupy the lower part of the edifice. In ſome cities, Valladolid for example, which have no place particularly ſet apart for theſe combats, the principal ſquare is converted into a theatre. The balconies of the houſes are widened, ſo as to project over the ſtreets which end there; and it is really a very intereſting ſight to ſee the different claſſes of people aſſembled around this ſquare, waiting for the ſignal when the entertainment is to commence, and exhibiting every external ſign of impatience and joy. The ſpectacle commences by a kind of proceſſion round the ſquare, in which appear, both on horſeback and on foot, the combatants who are to attack

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the fierce animal; after which two alguazils, dreſſed in perukes and black robes, advance with great gravity on horſeback; who go and aſk from the preſident of the entertainment an order for it to commence. A ſignal is immediately given; and the animal, which was before ſhut up in a kind of hovel with a door opening into the ſquare, ſoon makes his appearance. The bull is received with loud ſhouts, and almoſt ſtunned by the noiſy expreſſions of joy. He has to contend firſt againſt the picadores, combatants on horſeback, who, dreſſed according to the ancient Spaniſh manner, and as it were fixed to their ſaddles, wait for him, each being armed with a long lance. This exerciſe, which requires ſtrength, courage, and dexterity, is not conſidered as diſgraceful. Formerly the greateſt lords did not diſdain to practiſe it; even at preſent ſome of the hidalgos ſolicit for the honour of fighting the bull on horſeback, and they are then previouſly preſented to the people, under the auſpices of a patron, who is commonly one of the principal perſonages at court.

The picadores, whoever they may be, open the ſcene. It often happens that the bull, without being provoked, darts upon them, and every body entertains a favourable opinion of his courage. If, notwithſtanding the ſharp-pointed weapon which defends his attack, he returns immediately to the charge, their ſhouts are redoubled, and their joy is converted into enthuſiaſm; but if the bull, ſtruck with terror, appears pacific, and avoids his perſecutors, by walking round the ſquare in a timid manner, he is hooted at and hiſſed, and thoſe near whom he paſſes load him with blows and reproaches. He ſeems then to be a common enemy, who has ſome great crime expiate; or a victim, in the ſacrifice of which all the people are intereſted. If nothing can awaken his courage, he is judged unworthy of being tormented by men; the cry of *perros, perros*, brings forth new enemies againſt him, and large dogs are let looſe upon him, which ſeize him by the neck and ears in a furious manner. The animal then finds the uſe of thoſe weapons with which nature has furniſhed him; he toſſes the dogs into the air, who fall down ſtunned, and ſometimes mangled; they however recover, renew the combat, and generally finiſh by overcoming their adverſary, who thus periſhes ignobly. If, on the other hand, he preſents himſelf with a good grace, he runs a longer and nobler, but a much more painful, career. The firſt act of the tragedy belongs to the combatants on horſeback; this is the moſt animated and bloody of all the ſcenes, and often the moſt diſguſting. The irritated animal braves the pointed ſteel, which makes deep wounds in his neck, attacks with fury the innocent horſe who carries his enemy, rips up his ſides, and overturns him together with his rider. The latter, then diſmounted and diſarmed, would be expoſed to imminent danger, did not combatants on foot, called *chulos*, come to divert the bull's attention, by ſhaking before him pieces of cloth of various colours. It is, however, at their own riſk that they thus ſave the diſmounted horſeman; for the bull ſometimes purſues them, and they have then need for all their agility. They often eſcape by letting fall in his way the piece of ſtuff which was their only arms, and againſt which the deceived animal expends all his fury. Sometimes he does not accept this ſubſtitute, and the combatant has no other reſource but to throw himſelf ſpeedily over a barrier, ſix feet high,

high, which incloſes the interior part of the arena. In ſome places this barrier is double, and the intermediate ſpace forms a kind of circular gallery, behind which the purſued torreadore is in ſafety. But, when the barrier is ſingle, the bull attempts to jump over it, and often ſucceeds. The reader may eaſily imagine in what conſternation the neareſt of the ſpectators then are; their haſte to get out of the way, and to crowd to the upper benches, becomes often more fatal to them than even the fury of the bull, who, ſtumbling at every ſtep, on account of the narrowneſs of the place and the inequality of the ground, thinks rather of his own ſafety than of revenge, and beſides ſoon falls under the blows which are given him from all quarters.

Except in ſuch caſes, which are very rare, he immediately returns. His adverſary, recovered, has had time to get up; he immediately remounts his horſe, provided the latter is not killed or rendered unfit for ſervice, and the attack re-commences; but he is often obliged to change his horſe ſeveral times. Expreſſions cannot then be found to celebrate theſe acts of proweſs, which for ſeveral days become the favourite topic of converſation. The horſes, very affecting models of patience, courage, and docility, may be ſeen treading under their feet their own bloody entrails, which drop from their ſides half torn open, and yet obeying, for ſome time after, the hand which conducts them to new encounters. Spectators of delicacy are then filled with diſguſt, which converts their pleaſure into pain. A new act is however preparing, which reconciles them to the entertainment. As ſoon as it is concluded that the bull has been ſufficiently engaged by the combatants on horſeback, they retire and leave him to be irritated by thoſe on foot. The latter, who are called *banderilleros*, go before the animal; and the moment he darts upon them they plunge into his neck, two by two, a kind of darts called *banderillas*, the points of which are hooked, and which are ornamented with ſmall ſtreamers made of coloured paper. The fury of the bull is now redoubled; he roars, toſſes his head, and the vain efforts which he makes ſerve only to increaſe the pain of his wounds; this laſt ſcene calls forth all the agility of his adverſaries. The ſpectators at firſt tremble for them, when they behold them braving ſo near the horns of this formidable animal; but their hands, well exerciſed, aim their blows ſo ſkilfully, and they avoid the danger ſo nimbly, that, after having ſeen them a few times, one neither pities nor admires them, and their addreſs and dexterity ſeem only to be a ſmall epiſode of the tragedy, which concludes in the following manner: when the vigour of the bull appears to be almoſt exhauſted; when his blood, iſſuing from twenty wounds, ſtreams along his neck and moiſtens his robuſt ſides; and when the people, tired of one object, demand another victim; the preſident of the entertainment gives the ſignal of death, which is announced by the ſound of trumpets. The matador then advances, and all the reſt quit the arena; with one hand he holds a long dagger, and with the other a flag, which he waves backwards and forwards before his adverſary. They both ſtop and gaze at one another; and, while the agility of the matador deceives the impetuoſity of the bull, the pleaſure of the ſpectators, which was for ſome time ſuſpended, is again awakened into life. Sometimes the bull remains motionleſs, throws up the earth with his foot, and appears as if meditating revenge.

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The bull in this condition, and the matador who calculates his motions and divines his projects, form a group which an able pencil might not disdain to delineate. The assembly in silence behold this dumb scene. The matador at length gives the mortal blow; and, if the animal immediately falls, a thousand voices proclaim with loud shouts the triumph of the conqueror; but if the blow is not decisive, if the bull survives and seeks still to brave the fatal steel, murmurs succeed to applause, and the matador, whose glory was about to be raised to the skies, is considered only as an unskilful butcher. He endeavours to be soon revenged, and to disarm his judges of their severity. His zeal sometimes degenerates into blind fury, and his partizans tremble for the consequences of his imprudence. He at length directs his blow better: the animal vomits up blood; he staggers and falls, while his conqueror is intoxicated with the applauses of the people. Three mules, ornamented with bells and streamers, come to terminate the tragedy. A rope is tied round the bull's horns which have betrayed his valour, and the animal, which but a little before was furious and proud, is dragged ignominiously from the arena which he has honoured, and leaves only the traces of his blood and the remembrance of his exploits, which is soon effaced on the appearance of his successor. On each of the days set apart for these entertainments, six are thus sacrificed in the morning, and twelve in the afternoon, at least in Madrid. The three last are given exclusively to the matador, who, without the assistance of the picadores, exerts his ingenuity to vary the pleasure of the spectators. Sometimes he causes them to be combated by some intrepid stranger, who attacks them mounted on the back of another bull, and sometimes he matches them with a bear: this last method is generally destined for the pleasure of the populace. The points of the bull's horns are concealed by something wrapped round them, which breaks their force. The animal, which in this state is called *embolado*, has power neither to pierce nor to tear his antagonist. The amateurs then descend in great numbers to torment him, each after his own manner, and often expiate this cruel pleasure by violent contusions; but the bull always falls under the stroke of the matador. The few spectators who are not infected by the general madness for this sport, regret that those wretched animals do not, at least, purchase their lives at the expence of so many torments and so many efforts of courage; they would willingly assist them to escape from their persecutors. In the minds of such spectators, disgust succeeds compassion, and satiety succeeds disgust. Such a series of uniform scenes makes that interest become languid, which this spectacle, on its commencement, seemed to promise. But to connoisseurs, who have thoroughly studied all the stratagems of the bull, the resources of his address and fury, and the different methods of irritating, tormenting, and deceiving, him, none of these scenes resembles another, and they pity those frivolous observers who cannot remark all their varieties. Even the court formerly reckoned bull-fights among the number of its festivals. The Plaza-Mayor was the theatre of them, and the king and the royal family honoured them with their presence. His guards presided there under arms. His halberdiers formed the interior circle of the scene; and their long weapons, held out in a defensive posture, were the only barriers they opposed against the dangerous caprices of the

bull: and theſe entertainments were called, by way of excellence, *fieſtas reales*, or 'royal feaſts.' M. Florin, in his Conqueſt of Granada, publiſhed at Paris in 1791, has the following very elegant deſcription of a *bull-fight*, as given by Iſabella, the Spaniſh queen, to exhilarate the drooping courage of her troops, during the important ſiege of that city:

"In the center of the camp is a vaſt circus ſurrounded with rows of ſeats riſing one above the other; thither the Caſtilian queen, queen, ſkilled in the happy art of gaining the hearts of her ſubjects by providing pleaſures for them, often invited her warriors to the favourite amuſement of the Spaniards. There the youthful chiefs, laying aſide their coats of mail, and clad in ſilken veſts, armed only with lances, and mounted on the fleeteſt courſers, attack and vanquiſh the moſt ſavage bulls. The ſoldiers on foot, ſtill more lightly armed, with their hair bound up in nets, hold in one hand a purple veil, and, in the other, ſharp lances. The alcade proclaims the laws of the fight, that no combatant ſhall be aſſiſted, and that they ſhall be allowed no other arms than the lance for the attack, and the purple veil for defence. The monarchs, ſurrounded by their court, preſide at theſe ſanguinary amuſements; and the whole army, ſeated in the vaſt amphitheatre, teſtify, by loud ſhouts of joy and the moſt violent expreſſions of applauſe, their exceſſive fondneſs for theſe ancient combats. The ſignal is given, the barrier opens, the bull ruſhes into the midſt of the circus: but, on ſeeing the ſpectators, on hearing their ſhouts, accompanied with the ſound of thouſands of trumpets, he ſtops aſtoniſhed and diſmayed; his noſtrils ſmoke; with glowing eyes he looks around the amphitheatre: he ſeems ſuſpended between amazement and fury. He ſuddenly attacks a knight, who wounds him and gallops at full ſpeed to the other end of the circus: the bull, enraged, cloſely purſues, tears up the ground with fury, and ruſhes on the ſplendid veil, which one of the foot-ſoldiers holds out before him. The agile Spaniard in one inſtant eludes his force, ſuſpends the light veil on his horns, and launches a ſharp dart, which makes him bleed anew. Soon after, pierced by all their lances, and by the penetrating darts, the barbed points of which remain in the wound, the animal bounds over the plain, utters the moſt dreadful bellowings, runs furiouſly round the circus, ſhakes the innumerable darts that ſtand thick in his broad neck, ſcatters around him a cloud of ſand and pebbles mixed with ſhreds of purple ſtained with blood and foam, till at length he falls exhauſted by violence, rage, and anguiſh. In one of theſe combats, the raſh Cortez narrowly eſcaped loſing a life deſtined to great exploits. Ardent to ſignalize himſelf before the beautiful Mendoza, who had long poſſeſſed his heart, Cortez, mounted on an Andaluſian ſteed, wounded a furious bull, and fled. Notwithſtanding the danger that threatened him, the young lover keeps his eyes fixed on the beauty that ever engroſſed his thoughts, and ſees an orange bloſſom, that had adorned her boſom, fall into the arena. Cortez ſprings from his courſer, runs and ſtoops to pick it up; the bull ruſhes onward, and aims at the imprudent youth. Mendoza's cries warn him of his danger. Cortez, without letting go the flower, directs his lance with a ſteady eye at the ſhoulder of the animal, who inſtantly falls dead on the ſand. The ſoldiers all join in ſhouts of applauſe: Iſabella offers to crown him as a victor: but Cortez declines

cline the wreath, and ſhews the valued flower, which had nearly coſt him his life. He beſtows innumerable kiſſes on it, preſſes it to his heart, breaks his lance, and leaves the circus."

Pepin king of France, ſurnamed, from his diminutive ſize, *le Bref*, or 'the Short,' introduced a combat of this deſcription at Paris, with a view to convince his ſubjects, that, notwithſtanding his deficiency of ſtature, he was not deficient in ſtrength and magnanimity, and conſequently not unworthy to reign over them.—In this entertainment, which included a fight between a bull and a lion, the latter had got his antagoniſt under; when Pepin, turning towards his nobility, ſaid, "Which of you will dare to go and part or kill theſe furious beaſts?" The bare propoſal made them ſhudder: nobody made anſwer. "Then I will be the man," replied the monarch; upon which, drawing his ſabre, he leaped down into the arena, made up to the lion, and killed him; and, without delay, diſcharged ſuch a ſtroke on the bull as left his head hanging by the upper part of his neck. The courtiers were equally amazed at ſuch courage and ſtrength; and the king, with an heroic loftineſs, ſaid to them, "David was a little man; yet he laid low the inſolent giant who had dared to deſpiſe him."

The feudal cuſtom called *bull-running*, which appears to have had its origin from bull-fights, was for many ages in uſe at Tutbury in Staffordſhire; where, anciently, on the day of the aſſumption of our Lady, a bull was turned looſe by the lord to the minſtrels; who, if they could catch and conquer him before he paſſed the river Dove, were to have him for their own, or, in lieu thereof, to receive each forty-pence; in conſideration of which cuſtom, they paid twenty-pence yearly to the lord.

BIRTH OF THE PLEASING ARTS.—*An Arcadian Romance.*

IN a valley of Arcadia, Amaryllis was a ſhepherdeſs; on the rocks above, Lycidas was a goatherd. Their ſituation approached that of primæval ſolitude; never had they obſerved other human forms than their old fathers and mothers, whom they viſited at the full moon, when their flocks were guarded by the ſilence of ſleep.

In the luxuriant valley Amaryllis conducted her ſheep, while Lycidas purſued his capricious goats on the rocky cliffs. Amaryllis found her companions like herſelf, timid and docile; they rather followed her, than ſhe them. Often had ſhe meaſured her height with the old ewes, and diſcovered how ſhe increaſed in ſtature.

Lycidas was vigorous as the goats he chaced; he flew fearleſsly along the points of cliffs, and ſtood on one foot, at the edge of a precipice, to ſnatch the wild goat hanging at the perilous extremity. Amaryllis frequently obſerved him above her with a tremulous delight; and, imitating his voice, found that her tones could not, like his, fill the hollow hills. Ah! there, ſhe thought, is one like myſelf, whoſe ſtrong feet outleap a goat! Lycidas looked down ſometimes on Amaryllis, and thought, There is one like myſelf, whoſe ſoft look is more tender than the eye of a lamb!

One day the ſhepherdeſs, at the brink of a river, was bathing a lamb; while Lycidas, leaning from a rock above, watched the tranſparent water-drops trickling on its ſnowy coat, and hanging her fingers with pearls. The lamb fell into the river; Amaryllis

ſhrieked. Behold Lycidas in the ſtream! He brings the breathleſs animal; he dries its velvet ſkin; he warms it in his breaſt; its little ſides palpitate once more. It is born again! (he exclaims,) preſenting it to Amaryllis.—Ah! (ſaid the paſtoral virgin, looking her gratitude,) I thought, till now, that a goatherd cared not for the ſorrows of a ſhepherdeſs.—Oh, Amaryllis! (replied Lycidas,) I often think of thee.—How ſingular is this, oh Lycidas! I, too, often think of thee.—When I view thee kiſſing a lamb, I would give ten of my goats to be that lamb.—Lycidas, thou ſhalt have my kiſſes when thou wilt; come from the mountains when thou wouldſt have me kiſs thee!

After this interview, Lycidas was continually deſcending from the rocks to receive the careſſes of Amaryllis. But ſweet kiſſes inſpired ſweet words: it became neceſſary to unite the goats of Lycidas with the ſheep of Amaryllis; and the mountaineers gradually abated their wildneſs among the mild inmates of the valley: yet, though influenced by the local ſoftneſs, and loſing their reſtleſs deſire of climbing by continually treading on a level earth, they ſtill retained their untamed ſpirit; and, never mingling with the timorous, ever preceded and conducted the feebler domeſties.

Obſerve, (ſaid Amaryllis to Lycidas,) how thy goats diſdain the ſociety of my ſheep! How is it, oh Lycidas! that thou admitteſt me to thy arms, as if I were thy equal?

I have heard my father ſay, (replied the youth,) that man is an animal more noble than a goat; that his face looks up towards the gods. And yet this ſeems an error; for my face only looks ſtraight forwards; were I to look up to the gods, I ſhould ſtumble.

Couldſt thou ever underſtand, (enquired Amaryllis,) what the goats think of man?—Oh, yes! aſſuredly they deem themſelves ſuperior. They climb, with their hollow foot, on ridges narrow as thy ſlender finger. I have viewed them ſleep on the point of a precipice, where my eye only could touch them: I have waked them by my voice; but they only raiſed their heads and ſhook their beards, and again laid themſelves to ſleep. I have watched at the foot of the rock, in patient helpleſſneſs. Such is man!

I have often thought, (replied Amaryllis,) that a man is a kind of goat; for our fathers have beards, but the faces of our mothers are ſmooth as mine and my ſheep. Thou too wilt have a beard, no doubt, (ſhe paſſed her hand playfully over his chin;) already I perceive a fine brown ſhade gliſten around thy face. How ſoft! I touch it, but cannot feel it. Be ſure all human beings are only a kind of goats and ſheep. Thine eye ſeems to command nature, thy ſtrong ſtep echoes on the earth; but I timidly follow thee, and all my glory is my ſubmiſſion.

In converſations thus ſimple and innocent, they ſometimes interchanged their thoughts; but they ſported more than they talked. At the margin of a lucid fountain, or under an umbrage dropping roſes, they divided their milk and their fruits; the velvet turf ſprang under their flying feet; the echo multiplied their ſilver voices. Mimicking a butting goat, Lycidas would run at Amaryllis; but Amaryllis moſt loved to lie down like a ſheep, and, in ſhort pantings, breathe on her beloved Lycidas. Amaryllis would conceal herſelf behind a woodbine hedge, or lie in the covering fern; and then Lycidas would call on her, ſeek her through all her hiding ſpots, and murmur at, yet half enjoy, the feigned abſence. Seldom could

could he track her through her inventive and myſterious paths, till the playful maid betrayed herſelf by a loud laugh; or attempted to fly, while her inviting eyes accuſed the purſuer's tardy embrace. Sometimes when he returned home ſhe would lie down, feigning to ſleep, while her eyes were half open, to ſee if Lycidas would immediately haſten to her; the youth kneeled, and ſighed, and kiſſed her eyes, till ſhe laughed. Sometimes he would diſorder her wavy treſſes, while ſhe murmured with a ſmile; and then would adorn them to his fancy, ſtudding them with roſes, or braiding them with jeſſamine. But, if he often loved to diſorder her fine treſſes, he was careful, in paſſing her favourite flowers, to ſupport their bended ſtalks, and to weave more cloſely her favourite ſhades. The tender reminiſcence of her lover's attention often mingled with the delicious perfumes of the flower, and the bowery verdure of the tree. He would compoſe what he called ſerpents of flowers, and fancifully wind them about her long treſſes, praying the gods that no other ſerpents might ever approach her.

One evening, beneath a lofty myrtle-tree, the beauteous Amaryllis was lamenting the death of a nightingale. She ſaid, Sweeteſt tears have fallen with the touching cloſe of its delicious tones: I felt the muſic creep along my nerves, and the fine vibrations play through my heart. I weep now, Lycidas, when I think ſuch a charming ſadneſs may never again give delightful tears.

Ah! that I could recal thy nightingale into exiſtence, as I did thy drowned lamb! exclaimed the amiable youth.—Thou never canſt, dear companion! it breathed a long and dying fall, like the gentle airs, moving the tops of the hollow reeds, making a moaning melody.—Studious to charm his beloved with the voice of the nightingale, the thoughts of Lycidas produced a reſtleſs night: the next day he gave Amaryllis the care of his goats, and promiſed an early return. The ſun declined, and Lycidas returned not. Amaryllis ſighed at its farewell beam. She ſat, her head reclining on her arm. Suddenly aerial notes floated in ſoft remote ſounds. The ſtartled Amaryllis exclaimed, The air ſings in the clouds! The notes ſeemed approaching to her. She looked up at the myrtle-tree. They warbled more muſically clear. She perceived Lycidas: he held ſomething in his hands to his lips.—Haſt thou found another nightingale? (Lycidas replied but by the accents of his harmonious mouth.) What miracle is this! Canſt thou give a vocal ſoul to a hollow reed?—Yes, (replied Lycidas,) it was thou who didſt inſtruct me: thou didſt reſemble the voice of the nightingale to the light airs breathing on the hollow reeds. All day I wandered for a nightingale, and I found none: I took a reed, and made little entrances for my breath: I ſaid, Oh, gentle reed! I can give thee air, if thou canſt yield me the voice of the nightingale: I breathed, and it was MUSIC.

This firſt of flutes was their moſt valued acquiſition, for it beſtowed a new pleaſure; and, in the ſolitude of lovers, pleaſure is their only avarice. Lycidas, gradually modulating his reed by his ear, perceived the ſucceſſive ſounds of melody, and, at length, the concords of harmony; but often, weary with trying muſical ſounds, the eyes of Amaryllis fired his ſoul, and the rapt enthuſiaſt, tender or gay at ſuch moments, made his lively inflections, and variety of accent, imitate their ſenſations and echo their paſſions. Such was the progreſs

greſs of inſtrumental muſic.—As they wept or laughed, they marvelled how the air, through a hollow reed, could ſpeak more perſuaſively to their hearts, than their own voices; they knew not that the imitations of art pleaſe more than nature herſelf. When Lycidas played, Amaryllis could not ſit ſtill, and her geſtures correſponded with the paſſions he inſpired. Was Amaryllis capricious? Lycidas breathed a long diſſolving ſtrain; ſounds aſſociated in her mind with ideas of tenderneſs; her ear arreſted her ſteps, and ſilenced her tongue; while the ſweetneſs of her phyſiognomy melted in the dew of her eye, and expreſſed itſelf in many a paſſionate attitude. Was Amaryllis plunged in the ſofteſt melancholy? Aerial tones, rapid and voluble, vibrated around; till, ſtealing the ſenſe of thought from the penſive beauty, they broke into gay melodies; while, reſponſive to their cheerful influence, her light footſteps gave what Lycidas termed the muſic to the eye: and ſuch was the origin of theatric DANCE.

Their enjoyments were only interrupted by his frequent abſences: whole days were ſometimes paſſed in ſearch of a wanton goat. How terrible is the abſence of him in whoſe preſence alone the heart feels the ſenſe of exiſtence! She thought this, one night in a cave where Lycidas was ſleeping, while the wakeful beauty hung enamoured over each intereſting feature: a ſuſpended lamp was placed near.—Ah! (ſhe continued) even this pleaſing light, this ſoft moon of my chamber, is the thought of his genius. It was from the pendent light of the glow-worm, in the illumined hedge, that he ſtole the hint; it is thus that, borrowing every happy conception from nature, he diſcovers around him the ſources of enjoyment.

The lamp threw its light on the even wall, and the ſolitary flame ſtrongly reflected the ſhadow of his face.—Ye gods! (exclaimed the fond maid,) behold two Lycidaſes! Ye ſpeaking features, can ye not for ever dwell on that wall? then would Lycidas not entirely quit me in his abſence. How conſoling even the ſhadow of what we love! Lycidas! thy ſhade would to me prove a tender companion. Fugitive and cheriſhed ſhadow! live here when Lycidas roves in the circling mountains!

She took up her ſheep-hook, and affectionately tracing the ſhadow of her lover, its ſharp iron graved it on the wall. Lycidas turned, and the lines remained unmoved.—He is for ever there! (exclaimed the enraptured Amaryllis.) Lycidas awoke.—Who is here? Amaryllis!—Thyſelf, thyſelf! (ſhe cried, in embracing him.) Theſe eyes ſhall worſhip thee when thou art on the cliffs: whole ſuns from me, the light ſhall give me thy preſence in the mimic wonder. Behold thy half-cloſed eye, thy half-opened lips, for ever ſmiling on that wall! Lycidas looked on the wall and on Amaryllis, and they embraced. Such was the origin of DESIGN.

Amaryllis, in the abſence of Lycidas, paſſed many hours in contemplating this firſt portrait of love. But the familiarity of enjoyment diſcovered its imperfections.—Diſmal ſhadow! (ſhe cried,) thou pleaſeſt me, becauſe thou reſembleſt Lycidas; but Lycidas would not charm me, did he reſemble thee! Where is the ſoft mutability of his cheek? Melancholy reſemblance of a form of gaiety! Only when Lycidas is dead, will he reſemble thee!

She held in her lap a treaſury of flowers, which ſhe was aſſorting to weave into a wreath for Lycidas. She took a roſe, and continued:—

nued :—This breathing roſe is the hue of his cheek: O ſhade! I will place it on thy cheek! This white lily is like the ſnow of his forehead: that its ſplendid whiteneſs could for ever ſpread on thine! Theſe blue violets are the purple of his veins: and ſhe delicately laid them along the neck. And this dark eye of the tulip is black as his brilliant eye: and ſhe fixed it there!

Entranced, ſhe gazed on the illuſive ſhadow: for a moment it was her Lycidas! his beautiful colours lived to her eye. Such was the firſt eſſay of colouring! The tinted impreſſions which ſome of the flowers left behind, gave them afterwards a hint to expreſs, from various plants and minerals, that variety of colours which gave birth to the more perfect parts of PAINTING!

Seated, in the ſultry ſilence of ſummer, at the entrance of a grove, they viewed their flocks retired beneath the umbrageous hedges.—Dear Lycidas, (ſaid the ſmiling maid,) how amiable the dewy mornings and the clear noons of ſummer! I love at noon-tide to lay myſelf beſide ſome rippling water, and liſten to its cooling murmurs mingling with the airy murmurs of a bee: oft as they blend, they lull my ſpirits with one rocking ſound, and I catch ſome half-dream. It is in winter I feel unhappy: the cave our fathers hewed is ſo round, or ſo ſquare, one ſees the termination of every thing; nothing is left to the imagination. It is not thus in nature; ſhe never impriſons the eye; all her lines are waved, and varied, and enchanted. How often I ſigh when I view nothing of life and motion before me, but the ſolitary flame trembling on the oppoſite wall!

Lycidas replied:—Had I been idle laſt winter, as thou wert, I too ſhould have been melancholy in the cave. Then I made reeds for ſummer ſongs, I added another aperture to my flutes, and I produced a new muſic. How many haſt thou broken in thy firſt leſſons? Do not mind them, Amaryllis; I am pleaſed when thou breakeſt them; for to me it is delightful to amend thy reeds, and to paſs my fingers over the places thine have touched.

She kiſſed Lycidas, and ſaid:—Oh, that our days may be blended, as the air we played this morning; two ſymphonious inſtruments yielding but one modulation. The other evening, waiting thy return beſide the rivulet, I thought it were happineſs for us to reſemble it; when it receives a new ſtream, the two ſtreams can never be ſeparated; they touch, and are for ever united!

And I wiſh, (continued Amaryllis,) that we could live in ſuch a grove through the happy circle of the year.—Thou doſt nothing but wiſh, (ſaid Lycidas.)—Had I ſuch a grove in winter, the aſpect of nature would conſole me in thy abſence. Obſerve how finely arched is the grove above us by the interwoven boughs; as if placed in a regular order, view the ſtraight trunks of the palm-trees; mark the little openings around, delighting the eye with various views; and here, as we ſit, this ſeems the only entrance of the grove. On the hollow curves of theſe trees my foot has reſted, when I climbed, till I was ſeated at their ſummit. One day I aſcended, and deſcried thee on the great rock, directing thy goats. I ſaw thee urging the vagrants home, and often kiſſing thy hand as thou didſt ſtretch it towards our valley; approaching, thou didſt ſound thy reed; then my heart bounded with the tender thought, that thou didſt remember me when thou thoughteſt that I could not ſee thee!

While the voluble beauty was deſcribing the grove, the eye of

Lycidas

Lycidas had intenſely followed the objects of her fancy. And now he was loſt in reverie. The bunch of grapes he held in his hand remained unplucked; when ſhe ceaſed, he ſpoke not; he wandered from thought to thought; he ſat in motionleſs abſtraction.

Art thou diſordered, my ſweet Lycidas? Not one ſmile dimples thy cheek; the heavineſs of ſleep preſſes thy lids. Ah! thou lookeſt on the earth, and not on Amaryllis!

Lycidas, ſtarting from his trance, flung the grapes from his hand in rapture. The creative ſmile of enthuſiaſm lighted up every feature; his eye ſwam in a liquid fire; a tremor of ſenſibility vibrated through his frame. Looking on Amaryllis with complacency, he ſaid—I was only thinking.

And why doſt thou think, dear Lycidas? to think is to toil. With thee I never think, I only feel; it is in thine abſence I think and ſuffer. In the enjoyment of thy preſence, when I lay my hand on thy beating heart; when I ſeal my trembling lips on thy ſoft lips; when I blend my breath with thy breath; it is then I am all ſenſation. Ah! then ſhould a ſingle thought interveне, I ſhould feel it an interruption of my exiſtence.

Lycidas replied, ſmiling, Doſt thou not perceive that thou thyſelf art thinking, while thou prattleſt againſt the labour of thought?

To think with thee, Lycidas, ſeems no pain; my thoughts embrace thy thoughts, as my arms wind around thy arms. In thine abſence only thinking tortures; for, ſince I have known thee, I abhor all that is ſolitary.

After this converſation, Lycidas was conſtantly abſent from Amaryllis. He had ever ſome prompt excuſe. A goat was miſſing; ſhe counted the herd, and the number was full. He fell down the rock, and was lamed; ſhe examined his foot, and it was unmarked by a bruiſe. He was in purſuit of a nightingale, but he never brought one home. He had liſtened hours near a bed of reeds, that his ear might diſcover a new muſic; but he ſtill could only play on one kind of reed. The autumn was cloſing, and his excuſes of abſence became every day more unſatisfactory.

Amaryllis ſat deſerted, and her whole ſoul dreamed of Lycidas. Her melancholy diffuſed itſelf over every ſurrounding object. How nature has ſuddenly changed! exclaimed the ſolitary virgin. She murmured with the murmurs of the rivulet; ſhe ſighed with the evening zephyr; ſhe flew to the portrait, and on the face of the ſhadowy Lycidas rolled living tears.

The evening return of Lycidas came unmarked by fondneſs; penſive, weary, and ſilent; a cold careſs, a rapid meal, and a deep ſlumber. It was now that ſhe firſt perceived how, in the preſence of unſocial man, one may find a terrible ſolitude.

Sometimes ſhe thought of tracking his concealed retreat; yet it was long ere ſhe could perſuade herſelf to abandon, for one day, the flock and the herd. Once ſhe followed him; in agony ſhe preſſed his rapid footſteps on the morning dews; ſhe came to a high rock from whence Lycidas precipitated himſelf with eaſe to another and diſappeared! She returned to the valley to think and to mourn.

At length the habitual reverie of melancholy thought and deſponding curioſity preſented a monſtrous imagination to her diſordered ſenſes; the terrific chimera that breeds in the delirium of love. She ſtruck her lovely forehead; the pulſes of her temples

roſe,

roſe, burning, to her touch; her ſoul ſickened, her frame ſhivered. She felt the pang of Jealouſy!

She thinks Lycidas may have diſcovered another Amaryllis: he flies to kiſs other cheeks! There are, doubtleſs, beings like ourſelves on this earth: other vallies, other rocks, and other ſhepherdeſſes! Ah! if every valley ſhould have its Amaryllis, then is Lycidas for every loſt to me; for all will adore Lycidas, though Lycidas may adore none. Ah, ingrate! capricious as thy goats! were there as many Lycidaſes, thou wouldſt be to me the only Lycidas; for I feel I have but one heart, and one heart can love but once.

Every evening Lycidas found his Amaryllis in tears. He ſaid, Why doſt thou weep?—Lycidas, canſt thou aſk why I weep? When thou ſhakeſt the flower, doſt thou inquire why the trembling dews are ſcattered?

Lovelier than the flowers at thy ſeat in the grove, has thy Lycidas ever rudely touched thy ſoftneſs?

Lycidas, thoſe flowers thy hands reared are faded. Once, in gazing on them, methought they had a voice; I heard, or ſeemed to hear, thou wert then kiſſing another Amaryllis. I turned, in horror, from thoſe flowers. How one can cheriſh and abhor the ſame object!

Another Amaryllis! (exclaimed Lycidas.) Is there another on this earth? I have ſeen the ſame plants, and the ſame animals, reproduce themſelves; but never have I ſeen an infant Amaryllis. I conſider thee as a ſolitary beauty in Nature; there is but one ſun, one moon, and one Amaryllis!

Enamouring embraces gave to the virgin's ſoul a new ſenſation of felicity; that which, in one day, reſtores the loſt happineſs of years. Drops of tears rolled on the fine carnation of her cheek.—Still thou weepeſt! cried Lycidas, kiſſing them one by one.—Lycidas, theſe are not like the tears I wept.—Are there, then, two kinds of tears?—What know I, but this, oh, Lycidas! that I could wiſh for ever to feel the ſtrange delight of theſe ſweet tears.

When Lycidas awoke the ſucceeding morning, he quitted not Amaryllis as of late. An unanxious ſleep reſtored the ſerenity of pleaſure; his ſoul moved in the calm of the paſſions; his eye and his hand alike careſſed; and his voice had the melody of rapture, for he anticipated a new enjoyment.

He ſpoke.—Feeleſt thou not the hoary morning with its froſty breath? ſoon will it come with a naked head ſpread with ungenial ſnow: the old year creeps on with the imperfect day. Is not the old year like our old fathers? Thou muſt quit thy grove.—Alas? if thou forſakeſt me this winter, the cave will be my ſepulchre. Thou muſt bury me in it, as we buried the father of my father.

Amaryllis! thou ſhalt no more live in a cave; thou ſhalt reſide in a grove; but it is a grove without leaves. It was for this I quitted thee inceſſantly. I toiled, till my limbs could ſcarcely conduct me home; I thought, till even in thy preſence my thoughts felt weary.—A ſmile played on the penſive features of Amaryllis; an indiſtinct idea ruſhed acroſs her mind.—Say, what novel miracle has Lycidas invented?—Come with me! cried the youth, riſing with rapture.—I cannot (ſaid Amaryllis): I once followed thee till I reached the great rock, from whence thou fleweſt like the eagle that builds its ærie there.—For thee a ſmoother paſſage is formed: thou ſhalt

walk over the waters!—What ſayeſt thou! Can the foot repeat its ſteps on aught but the ſolid earth?—Lycidas returned to his ſeat, and ſaid: I muſt firſt inform thee of another diſcovery. One day, returning to the grove without leaves, I found the rock had diſparted. I ſought to enter by the lower part; the broad ſtream oppoſed. I ſwam acroſs; but thou canſt not ſwim!—Alas! exclaimed Amaryllis. —I ſat dejected on the bank. As my eye reached the grove without leaves, I ſighed. A long-tailed bird now flew acroſs the ſtream. It floated in air by the undulations of its tail. Till then I had never obſerved the manner of its flight: but we find every thing, when we are deeply intereſted in its diſcovery; and Nature—.

Proceed, proceed! (cried the impatient Amaryllis;) thou art too fond of reflections.

I then perceived a large fiſh. I obſerved the ſharp fins cutting the wave; its head ſteadily firm; its tail moving gently from ſide to ſide. Suddenly I cried out, I will make a fiſh! I took planks; I hollowed the trunk of a tree to bear us within, as if we were the entrails of the fiſh. I conſtructed the head (the prow), and the tail (a ſtern with a moveable helm,) and I made two fins (the oars): but then I found I could not direct the motion againſt the winds; yet the bird ſteered againſt the winds. I placed two pieces of my veſt erect in the fiſh of wood; and theſe were the wings (ſails). And now, Amaryllis, we can ſwim like a fiſh, and fly like a bird. The river wanders but for thee; and thou ſhalt walk on the ſurface of the waters!

Lycidas now conducted Amaryllis to the banks of the river. She raiſed her hands in wonder at the view of the wooden fiſh. Tremblingly ſhe entered. Lycidas unfurled the ſail; he puſhed off the little bark; and now they glide on the ſtream!

Be it thine, dear partner of my inventions! (ſaid the firſt navigator) to conduct the tail of the fiſh. How proudly it elevates its head! I will give motion to the fins.—In mute aſtoniſhment Amaryllis turned the helm. She looked around, and then exclaimed, Lycidas! lo, the mountains and the valleys move! the earth itſelf wondering at thy happy audacity, riſes to purſue us, fugitives from our native ſoil!

Thou ever yieldeſt to thy fancy, Amaryllis! The earth moves not, but we move.—Ah, Lycidas! if, in returning to our cheriſhed home, I find all departed from us! where ſhall I look for our ſheep and our goats, if the mountains can leap into the river? Art thou certain the earth moves not? Surely what mimics motion ſo well, has motion!

Like thee I thought, Amaryllis, when I firſt quitted the ſhore: like thee, aſtoniſhed, I beheld the mountains tremble, and the vallies glide! My heart coiled within me. Impatiently I gained the ſhore; I graſped it in eager joy; I kiſſed it, I wept over it: Cheriſhed earth! (I cried,) on which my Amaryllis treads, never ſhall my feet again wander. But ſoon I found it had never moved.

Amaryllis now, watching the motion of the oars, was again rapt in wonder. The light water-drops, falling from the raiſed oars, excited her firſt attention. She deſired to examine them.—I thought (ſhe ſaid) thy fins had white feathers; they glittered like the looſe plumage of the dove, ſcattered by the winds.—How thou fancieſt all thou viewеſt! they are but the ſhining drops of water falling in the

the ſunbeam, and glittering as they fall.—And now ſhe wondered at the oars in the water. Leaning on one ſide, the little bark overſet, and the two firſt navigators fell into the ſtream. Lycidas with one arm embraces the fainting Amaryllis, and with the other ſteers along the waves; he ſuſtains her drooping head; and toiling in the river, exhauſted, gains the oppoſite bank. The touch of the ſolid earth reſtores him; he ſtretches the recovering beauty on the velvet turf; he awakens life by the warmth of his kiſſes; and, when her returned eyes open, the firſt object they reſted on were the eyes of Lycidas. His tender embraces quell her fugitive terrors. The boat floated ſlowly towards them.

See, Amaryllis! the wooden fiſh follows us: it was thy error in truſting all thy weight on one ſide: did I not tell thee we were as the entrails of the fiſh? I viewed thy deep attention; thou didſt look ſo beautiful with the fullneſs and ſoftneſs of thine eyes, that, in gazing on thee, I forgot the danger.

Lycidas, well might I gaze; I viewed another wonder in the ſtream. The two fins which thou didſt lift in the air were ſtraight, but, moving in the water, they were bent and doubled.

Thou erreſt, Amaryllis; behold them!—He plunged them into the ſtream; and the oar, ſtrait in the air, was bent in the water. He drew them out and examined them; then looked on the oars, and then on Amaryllis. Her eye was full of fearful wonder.—Theſe are things, ſaid Lycidas, recovering from his alarm, which the gods only underſtand.

Amaryllis, by the tender ſolicitude of Lycidas, had received no other ill than the fright of the ſudden plunge into the ſtream. He wrung the water from her fine treſſes, he kiſſed the drops hanging on her lids, and ſhook the wet from their dreſs. The ſun darted along an azure heaven; they gave no thought to the paſt, but proceeded purſuing each other in ſport.

They reached a deep and luxuriant valley; emboſomed among the circling hills, it ſeemed, even in Arcadia, as if Nature had ſought to conceal the ſpot ſhe fondly embelliſhed. In the centre, another miracle arreſted the rapid ſteps of Amaryllis; ſhe felt the ſame ſenſation the poliſhed European even now feels at the view of a pyramid. It was indeed but a rude edifice. The firſt houſe! the origin of ARCHITECTURE!

They entered. Amaryllis walked around, aſcended, returned, and re-aſcended. She ſpoke only with the interjections of ſurpriſe and admiration. Lycidas explained the ſcene.—What thou viewed, Amaryllis, is for thy winter reſidence. The cavern confined the fancy of thine eye; I therefore raiſed this abode on the boſom of the earth itſelf, that thus thou mayeſt queſtion Nature from hour to hour, and face to face. Thy converſation in the grove inſpired the invention. This abode is but a grove deſpoiled of its foliage. Behold the ſtraight trunks of the palm-trees (the pillars)! view the vaulted arch the grove formed with its intermingled boughs (the roof, or ceiling). I have hewed the reſting places thy foot found on the trunks of trees, and the apertures around, which tolaced thine eye (the ſtairs and windows). Thou didſt obſerve the grove had but one proper entrance, behold it! thou canſt find no admittance but between theſe open piles (the door). And all this I call a grove without leaves. This is but the firſt rude pile my hands have reared,

reared, like the firſt ſhade thou didſt trace of my features: when thou didſt diſcover the colouring, thou wert ſenſible of the imperfection. I foretel new improvements; ſublime ideas inflame my ſoul; and this imitation of Nature ſhall ſtill be enriched by ornaments, which ſhall endear this rude edifice, and make it, the houſe of the heart!

That day they delightfully wandered in this firſt houſe. Returning to the boat, Amaryllis promiſed to give no other motion to the fiſh of wood, than the quiet action of the tail, or rudder. While ſhe graſped it in her ſlender hand, ſhe kept her eyes on the full-orbed moon, and ſometimes ſtole a trembling glance on Lycidas. Smiling, he ſaid, Amaryllis, thou mayeſt move thine eyes; and, if thou ſmileſt on me, the oars will play more freely.—May I move my eyes, Lycidas? Ah! how ſweetly is thy face ſilvered over by the moon! how its beams break along the glittering waves! When the ſurface of the waters is but lightly touched, the moon looks as if it were ſwimming through the river; when unruffled, its ſilvery body ſeems to ſleep along its liquid bed. How muſically ſoft the ſound of thy cadenced oars dropping in the ſtream! How wondrous and how ſweet is all! Oh, Lycidas! till now I never found a path in the ſtream; ſurely the ſilence on the waters is more awful than the ſilence on the earth!

Returned to their valley, they found they had been miſſed. The bleating ſheep, from all parts, uttered their ſmall voices of complaint. It was the firſt day their tender paſtoreſs had deſerted. To want her affection, was to them to ſuffer a revolution in nature. Some had ſtraggled to the borders of the valley, and trembled in the foreign path; ſome lay panting, and extenuate; while ſome ſat alone, deſolated, knowing not where to go, ſince now there was no one to follow. Not thus with the goats: they fiercely butted at each other; now ran in circles, now wildly wandered up their native rocks; every where the ſpirit of revolt prevailed, exulting in a dangerous liberty.

That night, and the ſucceeding day, Lycidas conſumed in the chace of his rebels; and Amaryllis, in a thouſand tender offices to her ſoft-hearted family. This was the firſt trouble their happy occupations had known, and they reflected.

In ſeeking for new arts, dear Lycidas, we neglect thoſe of daily uſe.—Ah! (replied the inventive goatherd, with the ardency of genius,) I wiſh I had not the care of goats! Soft Indolence, thou nurſe of thought! thou ſhouldſt be my choice: ſtretched in ſome waving ſhade, or by ſome genial blaze, I would meditate on Nature; I would arrange the thouſand pictures ſhe has painted on my brain, till from them I ſtole a thouſand hints to form a thouſand arts!

My dear Lycidas, much I fear that thy thinking will to thee prove a ſource of great trouble: the fever of Curioſity ſcorches thy heart, and thy cheeks loſe their vermil fulneſs. I remember, when I preſſed my finger on thy cheek, how it ſunk in the firm fleſh. No more thou doſt taſte our ſimple happineſs; no more thou ſporteſt on the fern heath. Often thou ſtealeſt to ſolitude, and often my kiſs awakens thee from a day-dream.

They were now deſirous of reſiding in the houſe. Amaryllis, in quitting the cavern, lamented that ſhe left behind her favourite objects, the portrait of Lycidas, and ſome beautiful plants which grew

at

at the entrance of the grove.—Care not for my ſhadow (cried Lycidas to the ſorrowing maid), thou canſt trace another on the wall of the houſe; thou knoweſt my ſhadow always accompanies me.—True! but here thou ſmileſt ſo enchantingly; every feature ſo felicitouſly plays in thy intendering phyſiognomy. Surely when I drew thee thus aſleep, thou wert dreaming one of the dreams of genius; the invention of a new art ſeems painted on thy face.

In vain Lycidas aſſured her his features would remain the ſame in all places: to convince her, he laid himſelf down beſide the wall, but eſſayed in vain to expreſs the ſame phyſiognomy. Amaryllis ſtill mourned to leave the ſhadow of her lover.

This portrait of Lycidas, by having been inceſſantly traced by the ſharp hook of the paſſionate ſhepherdeſs, had gradually become an *alto relievo*; it ſtood prominent on the wall. At that moment Lycidas was employed in forming clay to fill up cavities in the boat: half vexed that Amaryllis conſumed the hour in idle regrets, he violently ſtruck the ductile earth, in ſportive anger, againſt the protuberant image. Behold another miracle! The argillaceous matter received the full impreſſion, and faithfully preſerved the phyſiognomy and the attitude. Thou haſt it now! (exclaimed Lycidas.) Now will my ſhadow wander with thee wherever thou roveſt! And this was the firſt effort of SCULPTURE!

Behold another art! (cried Amaryllis.) Now I feel but one regret—to abandon the cheriſhed plants that live where the grove opens.—Beautiful inſpirer of my inventions! in vain my talent toils to reach thy fancy. Thou meriteſt that I ſhould bid the flowers ſtart into birth beneath thy foot, colouring thy ſteps. But man cannot create, he can only imitate.

The firſt houſe was the ſource of their winter's happineſs. It formed the inceſſant object of Lycidas's meditation; it abſorbed his faculties; it was the paſſion of his imagination. Every day ſome new want prompted the invention of ſome new tool, and at length he diſcovered marble. Gradual embelliſhments became viſible; and the new ornaments, which had been inſenſibly formed, one day ſtruck, with their united graces, the thoughtful eye of Amaryllis. It had ceaſed to be the ſame houſe, it might have been called a Palace.

Lycidas (ſaid Amaryllis), I have marked thy conſtant occupations, and I would not diſturb thy happy labours by my complaints. The invention of new arts coſts me the loſs of many kiſſes; but my ſoul, nouriſhing a ſpark of thy divine flame, knows how to ſuffer thy abſence even when thou art preſent. What a ſcene of enchantment has ariſen? Pillars of wood are changed to columns of marble; the foot, that ſunk in the damp turf, now glides on the ſmooth pavement: here, elegant beauty riſes in a ſlender form; there, a maſſy grandeur repoſes, looking its immovability; a certain diſpoſition arranging all, repeating on one ſide what charms on the other, yet, blending all the parts into one, an uniform variety! But how ſhall I name that ſecret ſomething diffuſed through the whole; the ſoul animating this edifice like the light, which, itſelf imperceivable, makes all things perceived? When our language yields not the fullneſs of expreſſion, we call one thing by another; and this ſomething diffuſed throughout this edifice, is like muſic, a ſilent muſic; it is harmonious to the eye. My ſenſations obſcure themſelves in language: tell me, what is this thou haſt raiſed with the myſterious magic

magic of thy hand?—It is a new art! (replied Lycidas.) The forms thou viewest around I found in Nature; I discovered them in our own forms; and this art is a memorial of human affection!

Explain thyself! said Amaryllis, with fondness and curiosity.—Observe that column opposite. It is delicacy and lightness! It is thyself!—Lycidas smiled, while the wondering Amaryllis leant over him, contemplating the column with the tremor of delight.

Yes, it is thyself! Raised to thy memory, I gave it the delicacy of the feminine character. It has all thy gracility; it is a model of a woman with her ornaments. The volutes at its head, twining in spiral lines, represent thy locks curling beneath thine ear: the deep indented flutings that run down the trunk, imitate the folds of thy flowing dress: the base, which winds like twisted cords, resembles thy sandals.—But the columns opposite are richer than mine. What means that beautiful ornament, which looks like a rich foliage, branching from the top?—It is designed for what it seems. One day, near the cave, thou didst leave a panier on a young acanthus; the panier was covered by a tile, and the rich foliage of the plant grew around it; and we admired how thy basket, covered by a tile, had, as it were, become a part of the acanthus itself, forming a new and beautiful object. Examine it; it is but a copy.

Wonderful, Lycidas! but thyself, where art thou!—There (replied the first architect, pointing to a pillar of the Doric order, which is formed with the proportions and strength of the body of a man; a naked simplicity rather than a finished elegance), mark that plain unadorned column; it was the first I raised; it has a rude and primitive simplicity, for one never knows how to ornament a first production. The origin of the first column was the trunk of a tree; my great difficulty, at first, was to know how high I should make it; the height of the tree was too great, so I proportioned it to my own height. Those long arcades were imagined from a row of trees; and this dome above us, but imitates the vault of heaven.

Divine artist! thou has not explained that secret something, that silent music, which so touches and so satisfies the soul!—What thou fancifully calleſt a silent music, is the effect of a symmetrical proportion. In art, no inharmonious object is agreeable; all must be balanced. The height must be proportioned to the breadth; the relative parts of a work are measured by the whole, and the whole must be consonant to the parts. Such, Amaryllis, are the concords even in marble! This I learnt from Nature, for it is exhibited in the human form; there we trace an affinity between the foot, the hand, the finger, and all its parts: in every perfect work each individual member should enable us to judge of the magnitude of the work itself. It is thy tapering arms, winding like tendrils round my neck; thy two soul-dissolving eyes; and the regular graces of thy well-proportioned form, that enchant. From Nature and from thee, I learnt the gradual charm of unity in proportion, and uniformity in variety. Such was the origin of the orders of architecture!

It was now spring; the earth was mantled by a verdure, that vested her rather with beauty than with warmth. The echo, which was seldom awakened in the cold season, now returned to delight the ear of Amaryllis. Lycidas had united to the modulation of instrumental the charm of vocal music. But hitherto they were spontaneous and casual expressions of passion, without measure or design;

deſign; and, like the origin of human language, little more than natural ejaculations of the heart. Of late they had taken a new form; ſomething they had of art, and they became POETRY. He perceived that Amaryllis felt an ecſtaſy of pleaſure, when in the ſnowy ſeaſon, reclined by the ſocial blaze, he brought to her recollection the ſcenery of ſummer. The ideas of the ſun, the ſhades, and the waters, delighted her in the winter; it was the cheriſhed picture of Nature in her abſence; and ſhe felt the ſame pleaſure in the vivid deſcription, as when ſhe contemplated the portrait of Lycidas on their ſeparation. She called theſe deſcriptions painting in thought. Lycidas gradually diſcovered that his chaunt was ſuſceptible of order, and that it communicated a pleaſurable ſenſation when it ſolicited the ear by certain pauſes and cadences; this produced metre, or *blank verſe*. They were exquiſitely gratified when they found the art of deſcribing one object by another, as Amaryllis termed it; and this opened an eternal ſource of metaphors and images. Yet to this rude, though not unpleaſing, poetry, was ſtill wanting a peculiar charm; that artifice which at once combines the pleaſing returns of uniformity with the diverſifications of variety. This appeared when Amaryllis one day, liſtening to the echo, inquired of Lycidas, What is this myſterious flight that my voice takes? What is echo?—It is (ſaid Lycidas) the mirror of the voice! —Then it is not (ſhe continued) the voice itſelf? The liquid glaſs that reflects our forms is not a part of our forms!—Be not overcurious, Amaryllis; for thee it is ſufficient to ſport with the mimic ſound. I cannot invent an echo; the gods preſerve their own ſecrets. —The playful echo ever delights me, ſaid Amaryllis; but, when I call on thee, and thou heareſt me not, then, in cruel mockery, as I ſay 'Lycidas, Lycidas!' it only replies 'das, das!' Thou ſeeſt the echo is irrational; for it never anſwers but by the laſt ſyllable.—Ye gods! exclaimed the enthuſiaſtic Lycidas; thou loveſt the repeating accent of the echo: I can invent an echo! I will cloſe my verſes with a reverberating ſound.—Every line was now anſwered by an echoing line. Such was the origin of *rhime*.

It was in the luxuriance of ſummer that Amaryllis perceived her abode had ſtill ſome wants. This ſpot, ſelected by Lycidas for its amenity and foreſt-trees, was not ſtored with rural luxuries. Lycidas paſſed many hours in returning to their ancient cavern for its neighbouring fruits; every day he toiled beneath a panier filled with the Arcadian food; but, whenever he neglected to bring a copious lap of the freſheſt flowers, Amaryllis tenderly chid him; and often with a ſigh complained to Lycidas, that their trees were without fruit, and their ſoil without flowers. She had lamented ſo frequently that he never brought enough roſes and hyacinths, that, one day, having found a roſe-tree whoſe roots had been looſened in the ſoil, he eaſily extracted it, and threw it at the feet of Amaryllis. She exclaimed, Beauteous family of flowers, ye will all periſh at once! for your violated and tender ſociety, ſevered from your natal ſpot, pine in a foreign air; while ye yield your ſoothing odours, no maternal earth will ſupply you with new ſources of exiſtence; every breath of air ye fill with ſweetneſs, and in every breath ye are dying: prodigal of your cheriſhed exiſtence, a tender regret diſturbs us in the moment of pleaſure. Lycidas, I will bury them in the ſod that covers the lamb we buried laſt week.—She made a cavity in the earth,

earth, in which ſhe depoſited the roſe-tree. The tranſplanted roſes ſtruck their roots in the ſoil; the buſh flouriſhed to their wondering eye, and graced their habitation with its ſolitary beauty. Another diſcovery! more roſes and more hyacinths! Every pleaſing plant they met in their walks became domiciliated; they paſſed hours in herbaliſing; and in the ſucceeding ſummer the foreſt air was ſweetened with new odours, and a *flower-garden* embelliſhed their ſolitude.

But to have thus accidentally diſcovered the arts of planting and tranſplanting, was not ſufficient for the propagation of their trees. Their horticulture was ſtill imperfect. They perceived, with equal diſappointment and ſurpriſe, that the vines, moſt luxuriant in leaves, were barren; while others, of thinner foliage, were prodigal of fruit. Amaryllis wondered, and Lycidas reflected. He obſerved that the vine, yielding the moſt abundant fruit, was one which a favourite goat was allowed to browze. He obſerved; he meditated; he ſtole the hint. He lopped the branches of the vines. And it was the goat who firſt ſhewed to man the art of *pruning*.

The procuring of wild honey from the cavities of old trees and the clefts of rocks, was often an uncertain purſuit and an inſufficient reſource. Another inquietude, another want, another invention! They watched a little populace of foraging bees buſy on their ambroſial repaſt, ſpoiling the farina of flowers or preſſing the tops of the ſtamina, and thus anticipating the cautious œconomy of Nature. The amuſing ſound! when they plunge their little velvet heads in the calix of a flower, and pierce through the reſiſting petal, while the ſudden ſilence expreſſes the ardent pillage. Did they track the vagrants to their waxen tower? There, a new idea of ſociety gave a ſublime emotion to our two ſolitaries. They traced order in a multitude; they viewed a city and its inhabitants; and, with a delicious joy, Amaryllis diſcovered the queen-bee. She exclaimed, in contemplating their ſymmetrical, ſolid, and convenient, cells; thoſe finely planned edifices for thouſands of the living,—Lycidas, thou muſt acknowledge the architecture of the little bees is more wonderful than thine.—It is more perfect (replied Lycidas); for theſe fabrics are juſt adapted to their inmates, while in our palace there are a hundred things to add and to amend.

They inſtructed themſelves in the human paſſions (of which they were ſtrangers to many) in meditating on this ſociety. Innumerable offices of affection penetrated their hearts with the ſenſibility of humanity.

Lycidas having obſerved that the bees were ever ſettling on aromatic plants, on the thyme, the roſemary, the ſage, and reſted long on the flowers of the lime, he planted, on the ſouthern ſteep of his valley, numerous beds of balmy flowers, and odoriferous herbs.—Want (ſaid Lycidas), and not caprice, urges their reſtleſs flight; they are not volatile, but diligent. I can afford the wanderers a reſting ſpot; perhaps they may make it a home; and we will interchange our mutual induſtry.

What he imagined, ſucceeded. The explorers of ſweets ſoon diſcovered the new world; the aromatic land inſpired a thouſand adventurers, who, conſtant to pleaſure, knew no other native ſpot than where pleaſure was found. The queen followed the colony; they then built their cells, and peopled, with dark cluſters, the

pendent boughs. The voice of the bee was musical beneath the solitary heaven of our lovers. Such was the origin of an *apiary*, or bee-garden!

They had now much advanced in the art of painting; but as they only employed their pencils from a spirit of gaiety, and a passion for decoration, the sublime inventions of the art were not yet conceived; the ideal was unknown, but the exactest imitation was practised. They knew well to copy the purple bloom of the fruit as it hung on the tree, and the brilliant tint of the flower as it caught the sunbeam on its native stalk. They had mutually attempted to paint their own portraits; but the progress of such an elaborate piece had ever been interrupted by the tedious labour of the unskilled artist and the restlessness of the lively model. With more success they copied animals and insects. But love had inspired Lycidas to adorn the corner of the apartment occupied by Amaryllis. There he continually sketched the thousand capricious images dancing in his brain. The curious wall was gradually covered with fantastic forms, and exhibited a constant spectacle of fancy. Now the bower of Amaryllis was there elegantly festooned, and the tendrils of vines were happily flourished by a stroke of the pencil; now, as his humour prompted, the fibres of the leaves were transparently laboured, while on a delicate stem hung the finished petal of an unfinished flower: sometimes he copied a silken white fillet, with which Amaryllis circled her head-dress, binding it with scarlet flowers, glowing in the midst of their green leaves; sometimes he laboriously finished chimerical figures, which partly resembled human forms, but frequently terminated in that of some animal, or wore some ridiculous disproportion, provoking laughter; and sometimes the face of the volatile Amaryllis ending with the plumage of a bird, or the mottled wings of a butterfly. It was now a torrent foaming on rocks, and now a rivulet shaded with elms, whose silvery line was poured through the transparent umbrage. Every object they admired in their walks, on his return was sketched or finished on the wall. 'Twas now a tree, a prospect, or the clouds! But the Loves and the Graces often guided his deliriums of imagination, and the wall recorded the short annals of their lives, and pictured the epochas of his various inventions. There, were seen the first oversetting of the fish of wood; there himself breathing his first flute, and Amaryllis sketching his first shade. The fantastic scenery, airy or solemn, sketched or elaborate, inspired mirth, fancy, and love. Such was the origin of the playful arabesque, or grotesque paintings.

Around their house was an ornamented scenery; but as they sometimes bewildered themselves in the neighbouring valleys, or were desirous of indicating some particular spot, they invented local names, which were derived from some circumstance. One place was distinguished by the Kiss; and another, where Amaryllis, in eluding Lycidas, as he chased the laughing fugitive, tumbled down the hill, was called the Fall; a fine walk near the lake, through hedges of the arbutus, was known by the name of the Strawberry Walk; and a valley, luxuriant in flowers, by the title of the Summer Seat. There was a favourite spot called the Ruins of May. One morning in that month Amaryllis lay there asleep; Lycidas passed, and observed the indolent maid. He hastened to the hedges,

which were then in full flower, and despoiled them; and, having gathered a panier full of May blossoms, he quietly covered the sleeping beauty with their fragrant snows. She awoke in a cloud of streaming odours, while her pleasure-twinkling eye wondered at the flowery vest that covered her. Chiding her playful lover for this waste of the young year, the fact was recorded in the name given to the place, thence called "The Ruins of May." A similar origin is that of most local names.

What now remained to perfect the felicity of our two solitaries? Their earth was tinted with brilliant flowers; their trees bowed their branches with delicious fruit; their air was musical with the volant bee; they glided on the river with a happy audacity; the melodies of the nightingale were in their flutes; and consolation of absence was found in the pictured form, and the gaiety of a playful pencil embodied their fantastic imaginations; the charm of an artificial echo resounded in their verses, while they traced in their palace the columns which memorised their affections. The enchanting miracles of art long fascinated their eye, vibrating in their hearts the tranquil emotions of beauty; while the innocent voluptuousness which nature threw around them, solicited their enjoyment. Often they now turned from the productions of Nature and of Art, to gaze on each other: an interior sensation, an unknown desire, a querulous anxiety, existed in their hearts, and every day their felicity was diminished.

One day, as they sat beside an expansive lake, they beheld two swans sailing on the stream; images of majesty, of grace, and of peace! Our lovers reclined, admiring each form of elegance, and the luminous whiteness of their plumage, and all the variety and freedom of their animated attitudes. The male was intent to attract the admiration of the female; anxious to discover the concealed graces of his beauty, yet anxious with pride. He arranges his splendid plumage; he throws the trailing water from his beak along his shining back and over his freshened wings with the fond solicitude of that being who knows the pleasure of being loved. All his figure respires voluptuousness. He approaches her; he flaps his pinions, and the feathery snow sparkles. With a preluding caress, they wind their sinuous necks around each other; their wings yield a confused sound, and some white feathers fall on the disturbed lake. A continued embrace unites them. They pursue each interchange of delight; they feel all the shades of sensibility, and faint in the ebriety of the senses. At length the male is no more majestic; he is only tender, and lies indolently along the trembling waters. Again the female returns to her lover; again inflames him; again incites his last ardours; and only quits him reluctantly, but to plunge into the stream, and to extinguish the fires that still glow in her agitated form.

When the lovers had gazed on the affectionate swans, they turned to each other, and sighed. Lycidas snatched some feathers of the swans as they floated by them, and kissed them.—How they know (he cries) to love, and to render their love the source of their felicity! O Amaryllis! why is not the sense of our existence the sense of our happiness! Shall we become old without having known enjoyment?

Children

Children of Nature! the univerſal parent prepares for ye the maturity of happineſs! ſhe gives ye the ſoft pains ye now ſuffer, to render the fine pleaſures ſhe will beſtow on ye more exquiſite and pure. It is only in a corrupt ſociety curioſity anticipates paſſion; the energy of paſſion irritates your ſenſes, but ye do not irritate your ſenſes to obtain the energy of paſſion. Souls of chaſtity! when ye meet ye know yourſelves worthy of each other; your firſt embrace is the prelude of eternal confidence, and your voluptuouſneſs is in proportion to your virtue!

FRY's PANTOGRAPHIA, juſt publiſhed,

Containing accurate Copies of all the known ALPHABETS in the World, and Specimens of all well-authenticated ORAL LANGUAGES.

THIS Work could not have been dedicated to any one with more propriety than to the Preſident of a Society for the Encouragement of all Arts, of which the arrangement of words, ſentences, &c. originating in ſome alphabet, are the great diffuſers and promulgators. It muſt long have been reckoned one of the *deſiderata* of literature; and it now comes forth to the public with a neatneſs and accuracy of delineation not leſs honourable to Mr. Fry as a letter-founder, than agreeable to the curious and intelligent inſpector.

In the Preface, Mr. Fry has entered, we know not whether neceſſarily, into the grand queſtion of the origin of Language in general; whether it ariſes from divine inſpiration, or human invention; a queſtion which no man can hardly flatter himſelf with bringing to a deciſion. It is agreeable to find thoſe arguments on both ſides which are diffuſed through a great variety of volumes, many of them unattainable to the common reader, brought under one view, and opened to general inveſtigation. It is a field of ſpeculation on which thinking men have long indulged their reſearches, and on which ſacred hiſtory being ſilent, the diverſity of opinions may perhaps ſerve to invigorate, without improperly warping, the human faculties.

We muſt, however, be permitted to doubt whether by any thing there adduced men of either ſide will become converts to the opinions of the other. If man has never been found without the power and habit of articulating to a certain degree, ſurely the latter as well as the former may be deemed an eſſential property of his nature. The idea of inſpiration on this ſubject ſeems, when properly inveſtigated, ultimately to reſolve itſelf into a capacity of attaining certain ends by proceeding through certain means; every one of which have their origin mediately or immediately from the Deity. Theſe obſervations apply more ſtrongly to the invention of articular oral language than of alphabetical writing; the latter of which the Chineſe have never yet acquired by the mere light of natural reaſon.

The deſign of the work is, in the words of the Editor, "To promote the diffuſion of ſcience, which is effected in all caſes by facilitating the communication of ideas, at preſent done by means of oral or written language only." And he thus proceeds to the illuſtration of his deſign:—"The limits preſcribed to this volume render it impoſſible for the Author to enter into minute details or

anecdotes even of the moſt important languages: his view is rather to give an *outline* of the *ſubject*; to ſhew what is *commonly known*, and to put it in the power of Philologiſts to extend the ſphere of our knowledge; and to furniſh them with a center of communication to which their diſcoveries and reſearches may be directed: he has, therefore, only given what he promiſed, hoping it will enable his friends, and critics, to ſtate the errors, omiſſions, redundancies, &c. which he will endeavour to rectify on ſome future occaſion. No extenſive work was ever brought to perfection at once; but ſomething muſt be begun to form a ground for criticiſm and improvement."—Mr. Fry afterwards ſays, "The principal object of an undertaking of this nature is to exhibit correct copies or repreſentations of thoſe alphabets which are at preſent known: for this purpoſe the author has ſpared no pains or expence in procuring the moſt authentic originals and engraved copies which have come to his knowledge."

For the latter part of this ſentence full credit will be given to the author, when it ſhall be known that he preſents the literary world with copies of about *two hundred alphabets*, amongſt which are eighteen varieties of the Chaldee, and no leſs than thirty-two of the Greek; of which language we find the following anecdote: "Before the victories of Alexander, this language was principally confined to Turkey in Europe, Sicily, Dalmatia, Anatolia, and the Iſlands of the Archipelago: his generals and ſucceſſors extended it over many parts of Aſia and Egypt: ſo that, from the time of Alexander to that of Pompey, it may be conſidered as having been the moſt general language; and what is truly aſtoniſhing, it continues to be ſpoken in a manner which would have been intelligible to the ancient inhabitants of Greece. This is perhaps an inſtance of the greateſt longevity of language: few others have continued living and intelligible more than 500 years, whereas Greek has ſurvived 3500 years. The cauſes of this will be found in the ſtructure of the language itſelf, the extent of its uſe, and the great merit of the authors who have written in it. The New Teſtament (as well as the early fathers) is alſo written in Greek."

In the ſearch after theſe characters, Mr. Fry muſt have turned over numberleſs volumes, and he cites not leſs than fifty different works. Beſides theſe alphabets, we are preſented with 180 readings of the Lord's Prayer, and above ſeventy ſpecimens of other kinds, in various languages and dialects, or in exemplifications in Engliſh letters, in order to convey to the Britiſh reader ſome idea of their ſound and ſtructure. Amongſt the alphabets, a ſtriking pre-eminence of ſimplicity of character appears, [p. 164,] in the firſt of the two alphabets called *Iriſh Ogums*, one named *Croab*, and the other *O'Sullivan's*; and which being, we are told, "derivations from Roman notes, were firſt *Stenographic*, then *Steganographic*, then Magical, and laſtly Alphabetic—*Oga*, *Ogum*, and *Ogma*, are Celtic words, implying letters written in cypher, and indirectly an occult ſcience. *Ogan*, in Welſh, is Augury, Divination."

The ſpecimen of the tranſlation of Pope's "Univerſal Prayer," into the Malay language, by Captain Forreſt, is by no means the leaſt curious or intereſting paſſage in the work to us, as countrymen of that metaphyſical poet. We may be apt to forget that this celebrated poem has aſſiſted but too much in the propagation of *deiſm*, while we conſider with pride, that the thoughts and the diction

charm

charm in remote regions, and ſpread the fame of the poet's genius over realms divided from us by half the habitable world.

Among the characters appears a ſet ſaid to have been uſed by Adam; as others by Noah, Seth, and Abraham. Such a tradition proves, at leaſt, their very remote antiquity; though, as Mr. Fry properly remarks, no one would vouch for their authenticity: "but, in a work profeſſing to exhibit all, it was thought proper to give thoſe met with on reſpectable authority."

We ſhould wiſh to have ſeen added to the liſt of ſubſcribers to this curious work the names of the various Univerſities. Its object muſt be deemed well worthy their attention; while its neatneſs, and the care beſtowed in its execution, are highly commendable.

We ſhall conclude this ſlight ſketch of a work which cannot but intereſt the votaries of literature, with the concluding ſentence of the Preface. By this Mr. Fry beſpeaks that lenity which men of real learning, as moſt competent to judge of the difficulties of ſuch undertakings, are ever moſt ready to afford; and diſplays a diffidence, (the mark of true merit,) naturally ariſing from the experience of inaccuracy in others, and of the difficulty of avoiding it in an attempt of this nature: "If his feeble endeavours may be hereafter found to have been in any degree of ſervice to the literary world, and a future amended edition or ſupplement to the Pantographia may meet encouragement, as the plan is now before the public, he will ſolicit the kind aſſiſtance of the antiquary, the virtuoſo, and every gentleman poſſeſſed of an alphabet or ſpecimen of oral language of good authority, which ſhall be faithfully given in the work. He is ſenſible that in a work of this kind the candid critic may find many opportunities for the diſplay of his learning and *acumen*; but he hopes the novelty, extent, and importance, of the ſubject, will ſhield his errors or omiſſions from the ſeverity of cenſure."

REMARKS ON THE CHINESE LANGUAGE.

IN Chineſe, there are ſcarcely fifteen hundred diſtinct ſounds. In the written language, there are at leaſt eighty thouſand characters, or different forms of letters; which number, divided by the firſt, gives nearly fifty ſenſes, or characters, upon an average, to every ſound expreſſed: a diſproportion, however, that gives more the appearance, than the reality, of equivocation and uncertainty to the oral language of the Chineſe. Johnſon's Engliſh Dictionary affords inſtances of words taken in upwards of one hundred different ſenſes, without any doubt being thereby felt in Engliſh converſation; where, indeed, if there were, no recourſe can be had for aſcertaining its preciſe ſenſe, as in the Chineſe, to the form of the written character, peculiar to each ſenſe in which the word is received.

The number of words in any language, or at leaſt of ſenſes in which each word is underſtood, muſt depend chiefly on the ſtate of civilization to which the people that uſe it are arrived; and in ſome degree alſo, on the population of the country, and on the arts flouriſhing among them. It is not ſurpriſing, therefore, that the Chineſe dictionary ſhould contain, at leaſt, eighty thouſand characters. Perhaps if every ſenſe in which an Engliſh term is ſometimes received, were conſidered as a diſtinct word, and the vaſt variety of

thoſe employed in the different arts and occupations of life, were taken into account, the number would not be much fewer than that of the Chineſe.

The characters of the Chineſe language were originally traced, in moſt inſtances, with a view to expreſs either real images, or the allegorical ſigns of ideas: a circle, for example, for the ſun, and a creſcent for the moon. A man was repreſented by a erect figure, with lines to mark the extremities. It was evident that the difficulty and tedioufneſs of imitation will have occaſioned ſoon a change to traits more ſimple, and more quickly traced. Of the entire figure of a man, little more than the lower extremities only continue to be drawn, by two lines forming an angle with each other. A faint reſemblance, in ſome few inſtances, ſtill remains of the original forms in the preſent hieroglyphic characters; and the gradation of their changes is traced in ſeveral Chineſe books. Not above half a dozen of the preſent characters conſiſt each of a ſingle line; but moſt of them conſiſt of many; and a few of ſo many as ſeventy different ſtrokes. The form of thoſe characters has not been ſo flux as the ſound of words, as appears in the inſtance of almoſt all the country bordering on the Chineſe ſea, or Eaſtern Aſia, where the Chineſe written, but not the oral, language, is underſtood; in like manner as one form of Arabic figures to denote numbers, and one ſet of notes for muſic, are uniform and intelligible throughout Europe, notwithſtanding the variety of its languages.

A certain order of connection is to be perceived in the arrangement of the written characters of the Chineſe; as if it had been formed originally upon a ſyſtem to take place at once, and not grown up, as other languages, by ſlow and diſtant intervals. Upwards of two hundred characters, generally conſiſting each of a few lines or ſtrokes, are made to mark the principal objects of nature, ſomewhat in the manner of Biſhop Wilkins's diviſions, in his ingenious book on the ſubject of univerſal language, or real character. Theſe may be conſidered as the genera, or roots of language, in which every other word, or ſpecies, in a ſyſtematic ſenſe, is referred to its proper genus. The "heart" is a genus of which the repreſentation of a curve line approaches ſomewhat to the form of the object; and the ſpecies referable to it include all the ſentiments, paſſions, and affections, that agitate the human breaſt. Each ſpecies is accompanied by ſome mark denoting the genus, or heart. Under the genus "hand," are arranged moſt trades and manual exerciſes. Under the genus "word," every ſort of ſpeech, ſtudy, writing, underſtanding, and debate. A horizontal line marks a unit; croſſed by another line, it ſtands for ten, as it does in every nation which repeats the units after that number. The five elements of which the Chineſe ſuppoſe all bodies in nature to be compounded, form ſo many genera, each of which comprehends a great number of ſpecies under it. As in every compound character or ſpecies, the abridged mark of the genus is diſcernible by a ſtudent of that language, in a little time, he is enabled to conſult the Chineſe dictionary, in which the compound characters, or ſpecies, are arranged under their proper genera.

The characters of theſe genera are placed at the beginning of the dictionary, in an order, which, like that of the alphabet, is invariable, and ſoon becomes familiar to the learner. The ſpecies under each genus follow each other, according to the number of ſtrokes of which

which each conſiſts, independently of the one, or few, which ſerve to point out the genus. The ſpecies wanted is thus ſoon found out. Its meaning and pronunciation are given through other words in common uſe, the firſt of which denotes its ſignification, and the other its ſound. When no one common word is found to render exactly the ſame ſound, it is communicated by two words, with marks, to inform the inquirer that the conſonant of the firſt word, and the vowel of the ſecond, joined together, form the preciſe ſound wanted.

The compoſition of many of the Chineſe characters often diſplays conſiderable ingenuity; and ſerves alſo to give an inſight into the opinions and manners of the people. The character expreſſive of happineſs, includes abridged marks of land, the ſource of their phyſical, and of children, that of their moral, enjoyments. This character, embelliſhed in a variety of ways, is hung up almoſt in every houſe. Sometimes, written by the hand of the emperor, it is ſent by him as a compliment, which is very highly prized; and ſuch as he was pleaſed to ſend to the late ambaſſador, Lord Macartney.

Upon the formation, changes, and alluſions, of compound characters, the Chineſe have publiſhed many thouſand volumes of philological learning. No where does criticiſm more abound, or is more ſtrict. The introduction or alteration of a character, is a ſerious undertaking, and ſeldom fails to meet with oppoſition. The moſt ancient writings of the Chineſe are ſtill claſſical amongſt them. The language ſeems in no inſtance to have been derived from, or mixed with, any other. The written ſeems to have followed the oral language ſoon after the men who ſpoke it were formed into a regular ſociety. Though it is likely that all hieroglyphical languages were originally founded on the principles of imitation, yet, in the gradual progreſs towards arbitrary forms and ſounds, it is probable that every ſociety deviated from the originals, in a different manner from the others; and thus for every independent ſociety, there aroſe a ſeparate hieroglyphic language. As ſoon as a communication took place between any two of them, each would hear names and ſounds not common to both. Each reciprocally would mark down ſuch names, in the ſounds of its own characters, bearing, as hieroglyphics, a different ſenſe. In that inſtance, conſequently, thoſe characters ceaſe to be hieroglyphics, and were merely marks of ſound. If the foreign ſounds could not be expreſſed but by the uſe of a part of two hieroglyphics, in the manner mentioned to be uſed ſometimes in Chineſe dictionaries, the two marks joined together become in fact a ſyllable. If a frequent intercourſe ſhould take place between communities, ſpeaking different languages, the neceſſity of uſing hieroglyphics merely as marks of ſound would frequently recur. The practice would lead imperceptibly to the diſcovery that, with a few hieroglyphics, every ſound of the foreign language might be expreſſed; and the hieroglyphics, which anſwered beſt this purpoſe, either as to exactneſs of ſound, or ſimplicity of form, would be ſelected for this particular uſe; and, ſerving as ſo many letters, would form, in fact, together, what is called an alphabet.

This natural progreſſion has actually taken place in the city of Canton, where, on account of the vaſt concourſe of perſons, uſing the Engliſh language, who reſort to it, a vocabulary has been publiſhed of Engliſh words in Chineſe characters, expreſſive merely of ſound, for the uſe of the native merchants concerned in foreign trade; and

who,

who, by such means, learn the sound of English words. To each character is annexed a mark, to denote that it is not intended to convey the idea, but merely the foreign sound attached to it. The habit of applying the sound, instead of the meaning of hieroglyphics, to foreign words, led to the application of them likewise as sounds, to assist the memory in the pronunciation of other hieroglyphics in the in the same language, but not in common use; and the repeated application of them for those purposes may be at length supposed to have effaced their original use. Thus the passage from hieroglyphic to alphabetic writing may naturally be traced, without the necessity of having "recourse to divine instruction," as some learned men have conjectured "on the ground that the art of writing by an alphabet is too refined and artificial for untutored reason." It is indeed, equally natural to suppose that no such art could have preceded the establishment of hieroglyphic, as that a mixture of other nations superinduced the invention of alphabetic, language. The exclusive existence of the former still in China is a proof and an instance, that the number of foreigners who had ever found their way among them, as the Tartars, for example, however warlike and victorious, bore so very small a proportion to the vanquished, that it introduced no more a change in their usages and manners, than in their language.

The principal difficulty, in studying Chinese books, arises from the general exclusion of the auxiliary particles of colloquial language: The Chinese characters are in fact sketches, or abridged figures; and a sentence is often a string of metaphors. The words of an alphabetic language may be read without the least knowledge of their meaning; not so the hieroglyphic language, which is only to be learned by becoming acquainted with the signification or notion attached to each mark. A dictionary of hieroglyphics is less a vocabulary of the terms of one language with the correspondent terms in another, than an encyclopedia, containing explanations of the ideas themselves, represented by such hieroglyphics. In this sense, only, can the acquisition of Chinese words be justly said to engross most of the time of men of learning among them. To excel in language is to excel in learning; and to be master of the Chinese language is to understand all the arts and sciences, as far they have been improved, and are known, among that people.

ON CANNIBALISM.

THE first inducement which can lead men to this excess is extreme hunger; but, however pardonable it may be under such circumstances, if the flesh used be that of dead bodies, it is highly detestable on account of the consequences. During a dreadful famine in India, which destroyed more than an hundred thousand persons, when the roads and streets were covered with dead bodies, because people had not sufficient strength to inter them, several had the resolution to preserve their lives by this disgusting food; but some of them, though not many, found it so delicious, that, when the famine was at an end, they retained such an irresistible propensity to human flesh, that they lay in wait for the living in order to devour them. Besides others, there was a mountaineer, who concealed himself in a forest near the highway, where he used to cast a rope,

with a nooſe, over the heads of the paſſengers, whom he afterwards cut to pieces to gratify his unnatural appetite. He killed many perſons in this manner, but he was at length caught and executed. At the ſame time, and owing to the ſame cauſe, a woman uſed to go out for the expreſs purpoſe of carrying away children who had ſtrayed from their homes. She ſtopped up their noſe and mouth with clay, that they might not call out for aſſiſtance, and by theſe means ſuffocated them. She confeſſed the fact on being taken, and ſome ſalted human fleſh was found in her habitation.

The reaſon of the ſecond inducement to anthropophagy will now be readily comprehended. We read in different works, both ancient and modern, that many nations, in various parts of the world, have killed men, not on account of famine, but of the delicious taſte of human fleſh, which they not only fed upon but publicly ſold.

The third inducement, that people eat their deceaſed relations by way of ſhewing them honour, ſeems to be as romantic as it is repugnant to nature; yet there are many authors, from Herodotus, the Father of Hiſtory, down to modern times, who aſſert that this practice has prevailed among various nations.

A fourth incitement to eat human fleſh is hatred and revenge. There is a law in Cochinchina, that all rebels, when convicted of their crime, ſhall be executed, and that their fleſh ſhall be devoured by the king's loyal ſubjects, and, in particular, by thoſe who are neareſt his perſon.—At the time I reſided in that country, ſeveral executions of this kind took place. The men were beheaded, but the women were ſtabbed. After the execution, the ſoldiers who guarded the palace flocked around the bodies, and each cutting off, with a pocket knife, a ſmall piece, dipped it in the juice of an unripe lemon, and in that manner ſwallowed it. But as the ſize of the morſel is not determined by the law, and as moſt of the people have an averſion to ſuch food, many ſuffer the bit of fleſh to drop through their fingers, and ſwallow only the lemon.

At the time when the Cochineſe were at war with the Mois, a people who inhabit the mountains to the weſt, and who often make incurſions into their territories, the Cochineſe general marched with an army towards the mountains; but as he was not able to get at the enemy, on account of their inacceſſible ſituation, he ordered two priſoners he had taken to be put to death, and their fleſh to be devoured by his ſoldiers.

In the year 1777, being on-board an Engliſh ſhip of war in Turon harbour, in order to return from Cochin-china to Europe, a party arrived there who had joined a powerful rebel, named Nhae. This leader and his party had taken ſome of the king's confidential friends, and one in particular, who had formerly done him a great deal of injury. The latter they put to death; and, in order to gratify their revenge, they tore out his liver and ate it. The Cochin-chineſe, in general, when violently incenſed againſt any one, are accuſtomed to expreſs a wiſh that they may be able to devour his liver or his fleſh.

AMERICAN DISCOVERIES.

EXTRAORDINARY pains are ſaid, in the Philadelphia papers, to be taken at this time, by more European nations than one, to ſend enterpriſing travellers to explore the interior regions of America.

A Mr. Stewart, ſaid to be in the employ of the Britiſh court, has long ſince returned from four years travels through the hitherto unexplored regions to the weſtward. Taking his courſe weſt and ſouth-weſterly from the poſts on the lake, he penetrated to the head of the Miſſouri, and thence due weſt, to within about a hundred miles of the Pacific Ocean. Nothing prevented his reaching the coaſt but an inveterate war, which had for ſome time been carried on, with all the implacability of ſavage revenge, between the interior Indians and thoſe towards the ſea-coaſt-parts. So great, however, was the ardour of the enterpriſing Mr. Stewart to attain his object (the exploring from ſea to ſea), that he joined the Interior Indians in ſeveral battles againſt the Shore Indians; all of which coming ſhort of his object, the procuring peace, after ſome ſtay, he returned nearly by the route he had purſued going. Our information adds, that, beyond the Miſſouri, Mr. Stewart met with many powerful nations of ſavages, in general hoſpitable and courteous. The Indian nations he viſited weſtward appeared to be a poliſhed civilized people, having regularly-built towns, and being in a ſtate of ſociety not far removed from Europe, clad in ſkins cut in an elegant manner, and in many reſpects preferable to the garments in uſe among the whites. Adjacent to theſe nations is a vaſt range of mountains, which may be called the Alleghany of the weſtern parts of America, and ſerves as a barrier againſt the too frequent incurſions of the Coaſt Indians, who entertain a mortal antipathy to the nations and tribes inhabiting the eaſtward beyond the mountains.

REMEDY FOR THE BITE OF A SNAKE.

THE following is given as a new diſcovery of an infallible remedy for the bite of venomous ſnakes.

To JAMES ANDERSON, *Eſq. M. D. Phyſician-general, &c. &c.*

DEAR SIR, I have the pleaſure to ſend you the hiſtory of a caſe, which was attended with moſt alarming ſymptoms, as a confirmation of the beneficial effect to be expected from the uſe of Eau de Luce, or Spirits of Hartſhorn, in the bites of even the moſt dangerous ſnakes. On the 11th of this month, at half paſt three o'clock, P. M. one of the Dooley Bearers of the 2d regiment of cavalry, in the act of cutting a branch of a tree about one hundred yards from my houſe, was bit by a ſnake on the outſide of the left leg, a little below the knee. He felt immediately the pain ſtretching up his thigh, and in the courſe of ten or twelve minutes, he was ſeized with violent ſpaſms all over his body, and fell down, apparently without ſenſe or motion. He was then brought to me, when I found all his joints quite ſtiff, his limbs rigidly extended, pulſe hardly to be felt, and jaws faſt locked. Having no Eau de Luce at hand, I put a teaſpoonful of Hartſhorn into a tumbler with a ſmall quantity of water, and, having with difficulty opened his mouth by means of a turnſcrew, I poured it in, but, the power of deglutition being perfectly gone, only a very ſmall part found its way to the ſtomach; in ten minutes more I repeated the draught, and again a very ſmall quantity got to the ſtomach; ten minutes after I gave him another doſe, when, by holding his head back, the greateſt part went down, and in a few minutes he was ſenſibly relieved, as his joints became

more pliable. I now received ſome Eau de Luce, and in about ten minutes gave him about twenty-five drops mixed with a little water, which, by holding his head as before, got all into his ſtomach. He now began to recover his recollection, and, upon being aſked, pointed that he felt a pain in the breaſt, and the crown of his head. Half an hour after giving the laſt doſe I repeated it, and in about five minutes he was ſeized with vomiting, when he brought up a ſmall quantity of green ſlimy matter, which ſeemed to relieve him greatly, for he was then able to look about him. I repeated the medicine every half hour, and after every doſe he got a little better, ſo that at nine o'clock he was able, with a little ſupport, to walk home from my houſe, ſcarcely feeling any effect but weakneſs from the bite, and I ſaw him next morning perfectly well. During the internal exhibition of the medicine, the wound was rubbed with it, and ſeemingly with ſome good effect. The ſnake was not killed, ſo that I cannot ſay what ſpecies it was of, but, from the violent effects produced by its bite, I have no doubt of its being a very dangerous one.

ARCOT, *Nov.* 13, 1798. WILLIAM MACKINTOSH.

COMPARISON BETWEEN THE HUMAN RACE AND THAT OF SWINE.—By I. F. BLUMENBACH.

SOME late writers on natural hiſtory ſeem doubtful whether the numerous diſtinct races of men ought to be conſidered as mere varieties, which have ariſen from degeneration, or as ſo many ſpecies altogether different. The cauſe of this ſeems chiefly to be, that they took too narrow a view in their reſearches; ſelected, perhaps, two races the moſt different from each other poſſible, and, overlooking the intermediate races that formed the connecting links between them, compared theſe two together; or, they fixed their attention too much on man, without examining other ſpecies of animals, and comparing their varieties and degeneration with thoſe of the human ſpecies. The firſt fault is, when one, for example, places together a Senegal negro and an European Adonis, and at the ſame time forgets that there is not one of the bodily differences of theſe two beings, whether hair, colour, features, &c. which does not gradually run into the ſame thing of the other, by ſuch a variety of ſhades, that no phyſiologiſt or naturaliſt is able to eſtabliſh a certain boundary between theſe gradations, and conſequently between the extremes themſelves.

The ſecond fault is, when people reaſon as if man were the only organiſed being in nature, and conſider the varieties in his ſpecies to be ſtrange and problematical, without reflecting that all theſe varieties are not more ſtriking or more uncommon that thoſe with which ſo many thouſands of other ſpecies of organiſed beings degenerate, as it were, before our eyes.

As my obſervations reſpecting the bodily conformation and mental capacity of the negroes may ſerve to warn mankind againſt the firſt error, and at the ſame time to refute it, I ſhall here offer a few remarks to refute the falſe concluſion which might be formed from a careleſs compariſon of the degenerations among the human race with the varieties among other animals, and for that purpoſe ſhall draw a compariſon between the human race and that of ſwine.

More reaſons than one have induced me to make choice of ſwine for this compariſon; but in particular, becauſe they have a great ſimilarity, in many reſpects, to man: not, however, in the form of their entrails, as people formerly believed, and therefore ſtudied the anatomy of the human body purpoſely in ſwine; ſo that even, in the laſt century, a celebrated diſpute, which aroſe between the phyſicians of Heidelberg and thoſe of Durlach, reſpecting the poſition of the heart in man, was determined, in conſequence of orders from government, by inſpecting a ſow, to the great triumph of the party who really were in the wrong. Nor is it becauſe in the time of Galen, according to repeated aſſertions, human fleſh was ſaid to have a taſte perfectly ſimilar to that of ſwine; nor becauſe the fat and the tanned hides of both are very like to each other; but becauſe both, in regard to the economy of their bodily ſtructure, taken on the whole, ſhew unexpectedly, on the firſt view, as well as on cloſer examination, a very ſtriking ſimilitude.

Both, for example, are domeſtic animals; both *omnivora*; both are diſperſed throughout all the four quarters of the world; and both conſequently are expoſed, in numerous ways, to the principal cauſes of degeneration ariſing from climate, mode of life, nouriſhment, &c. both, for the ſame reaſon, are ſubject to many diſeaſes, and, what is particularly worthy of remark, to diſeaſes, rarely found among other animals than men and ſwine, ſuch as the ſtone in the bladder; or to diſeaſes excluſively peculiar to theſe two, ſuch as the worms, found in meaſled ſwine.

Another reaſon, however, why I have made choice of ſwine for the preſent compariſon is, becauſe the degeneration and deſcent from the original race are far more certain in theſe two animals, and can be better traced, than in the varieties of other domeſtic animals. For no naturaliſt, I believe, has carried his ſcepticiſm ſo far as to doubt the deſcent of the domeſtic ſwine from the wild boar; which is ſo much the more evident, as it is well known that wild pigs, when caught, may be eaſily rendered as tame and familiar as domeſtic ſwine: and the contrary alſo is the caſe; for, if the latter by any accident get into the woods, they as readily become wild again, ſo that there are inſtances of ſuch animals being ſhot for wild ſwine; and it has not been till they were opened and found caſtrated, that people were led to a diſcovery of their origin, and how and at what time they ran away. It is well aſcertained, that, before the diſcovery of America by the Spaniards, ſwine were unknown in that quarter of the world, and that they were afterwards carried thither from Europe. All the varieties, therefore, through which this animal has ſince degenerated, belong, with the original European race, to one and the ſame ſpecies; and ſince no bodily difference is found in the human race, as will preſently appear, either in regard to ſtature, colour, the form of the cranium, &c. which is not obſerved in the ſame proportion among the ſwine race, while no one, on that account, ever doubts that all theſe different kinds are merely varieties that have ariſen from degeneration through the influence of climate, &c. this compariſon, it is to be hoped, will ſilence thoſe ſceptics who have thought proper, on account of theſe varieties in the human race, to admit more than one ſpecies.

I. *In regard to Stature.*—In this reſpect the Patagonians, as is well known, have afforded the greateſt employment to anthropologiſts. The romantic tales, however, of the old travellers, who give to

these inhabitants of the southern extremity of America a stature of ten feet and more, are scarcely worth notice; and even the more modest relations of later English navigators, who make their height from six to seven feet, have been doubted by other travellers, who, on the same coast, sought for such children of Enoch in vain. But we shall admit every thing said of the extraordinary size of these Patagonians, by Byron, Wallis, and Carteret, the first of whom assigns to their chief, and several of his attendants, a height of not less than seven feet, as far as could be determined by the eye; the second, who asserts that he actually measured them, gives to the greater part of them from 5 feet 10 inches to 6 feet; to some 6 feet 5 inches, and 6 feet 6; but to the tallest, 6 feet 7 inches: and this account is confirmed by the last-mentioned of the above circumnavigators. Now, allowing this to be the case, it is not near such an excess of stature as that observed in many parts of America among the swine, originally carried thither from Europe; and of these I shall mention in particular those of Cuba, which are more than double the size of the original stock in Europe.

II. *In regard to Colour, and the Nature of Hair.*—The natives of Guinea, Madagascar, New Holland, New Guinea, &c. are black; many American tribes are reddish brown, and the Europeans are white. An equal difference is observed among swine in different countries. In Piedmont, for example, they are black. When I passed through that country, during the great fair for swine at Salenge, I did not see a single one of any other colour. In Bavaria, they are reddish brown; in Normandy, they are all white.

Human hair is, indeed, somewhat different from swine's bristles, yet in the present point of view they may be compared with each other. Fair hair is soft, and of a silky texture; black hair is coarser, and among several tribes, such as the Abyssinians, Negroes, and the inhabitants of New Holland, it is woolly, and most so among the Hottentots. In the like manner, among the white swine in Normandy, as I was assured by an incomparable observer, Sulzer of Ronneburg, the hair on the whole body is longer and softer than among other swine; and even the bristles on the back are very little different, but lie flat, and are only longer than the hair on the other parts of the body. They cannot, therefore, be employed by the brush-makers. The difference between the hair of the wild boar and the domestic swine, particularly in regard to the softer part between the strong bristles, is, as is well known, still greater.

III. *In regard to the Form of the Cranium.*—The whole difference between the cranium of a negro and that of an European, is not in the least degree greater than that equally striking difference which exists between the cranium of the wild boar and that of the domestic swine. Those who have not observed this in the animals themselves, need only to cast their eye on the figure which Daubenton has given of both.

I shall pass over less national varieties which may be found among swine as well as among men, and only mention that I have been assured by Mr. Sulzer that the peculiarity of having the bone of the leg remarkably long, as is the case among the Hindoos, has been remarked with regard to the swine in Normandy. "They stand very long on their hind legs," says he, in one of his letters; "their back, therefore, is highest at the rump, forming a kind of inclined plane;

plane; and the head proceeds in the same direction, so that the snout is not far from the ground." I shall here add, that the swine, in some countries, have degenerated into races which in singularity far exceed every thing that has been found strange in bodily variety among the human race. Swine with solid hoofs were known to the ancients, and large herds of them are found in Hungary, Sweden, &c. In the like manner the European swine, first carried by the Spaniards in 1509 to the island of Cuba, at that time celebrated for its pearl-fishery, degenerated into a monstrous race, with hoofs which were half a span in length.

ON FEMALE EDUCATION.—By Miss HANNAH MORE.

THOSE ladies who take the lead in society, are loudly called upon to act as the guardians of public taste, as well as public virtue, in an important instance. They are called upon to oppose, with the whole weight of their influence, the irruption of those swarms of publications that are daily issuing from the banks of the Danube; which, like their ravaging predecessors of the darker ages, though with far other arms, are overrunning civil society. Those readers, whose purer taste has been formed on the correct models of the old classic school, see with indignation and astonishment, the Vandals once more overpowering the Greeks and Romans. They behold our minds, with a retrograde but rapid motion, hurried back to the region of "chaos and old night," by wild and mishapen superstitions; in which, with that consistency which forms so striking a feature of the new philosophy, those who deny the immortality of the soul are most eager to introduce the machinery of ghosts; and by terrific and unprincipled compositions, which unite the taste of the Goths with the morals of Bagshot. [The newspapers announce that Shiller's Tragedy of the Robbers, which inflamed the young nobility of Germany to inlist themselves into a band of highwaymen to rob in the forests of Bohemia, is now acting in England by persons of quality.]

The writings of the French infidels, were, some years ago, circulated in England with uncommon industry, and with some effect; but the good sense and good principles of the far greater part of our countrymen resisted the attack, and rose superior to the trial. Of the doctrines and principles here alluded to, the dreadful consequences, not only in the unhappy country where they originated and were almost universally adopted, but in every part of Europe, where they have been received, have been such as to serve as a beacon to surrounding nations, if any warning can preserve them from destruction. In this country, the subject is now so well understood, that every thing which issues from the French press is received with jealousy; and a work, on the first appearance of its exhibiting the doctrines of Voltaire and his associates, is rejected with indignation.

But let us not, on account of this victory, repose in confident security. The modern apostles of infidelity and immorality, little less indefatigable in dispersing their pernicious doctrines than the first apostles were in propagating gospel truths, have only changed their weapons, but they have by no means desisted from the attack. To destroy the principles of Christianity in this island, appears at the present moment to be their grand aim. Deprived of the assistance

ſiſtance of the French preſs, they are now attempting to attain their object under the cloſe and more artificial veil of German literature. Conſcious that religion and morals will ſtand or fall together, their attacks are ſometimes levelled againſt the one, and ſometimes againſt the other. With occaſional ſtrong profeſſions of attachment to both of them, the feelings and the paſſions of the reader are engaged on the ſide of ſome one particular vice, or ſome one objection to revealed religion. Poetry as well as proſe, romance as well as hiſtory; writings on philoſophical as well as political ſubjects, have been thus employed to inſtil the principles of Illuminatiſm, while incredible pains have been taken to obtain able tranſlations of every book, which it was ſuppoſed could be of uſe in corrupting the heart, or miſleading the underſtanding. In many of theſe tranſlations, the ſtronger paſſages, which, though well received in Germany, would have excited diſguſt in England, are wholly omitted, in order that the mind may be more certainly, though more ſlowly, prepared for the full effect of the poiſon at another period.

Let not thoſe to whom theſe pages are addreſſed deceive themſelves, by ſuppoſing this to be a fable; but let them enquire moſt ſeriouſly whether I ſpeak the truth, when I aſſert that the attacks of infidelity in Great Britain are at this moment principally directed againſt the female breaſt. Conſcious of the influence of women in civil ſociety, conſcious of the effect which female infidelity produced in France, they attribute the ill-ſucceſs of their attempts in this country to their having been hitherto chiefly addreſſed to the male ſex. They are now ſedulouſly labouring to deſtroy the religious principles of women, and in too many inſtances they have fatally ſucceeded. For this purpoſe, not only novels and romances have been made the vehicles of vice and infidelity, but the ſame allurement has been held out to the women of our country, which was employed by the original tempter—Knowledge. Liſten to the precepts of the new German enlighteners, and you need no longer remain in that ſituation in which Providence has placed you! Follow their examples, and you ſhall be permitted to indulge in all thoſe gratifications which cuſtom, not religion, has too far overlooked in the male ſex.

We have hitherto ſpoken only of the German writings; but, as there are multitudes who never read, equal pains have been taken to promote the ſame object through the medium of the ſtage; and this weapon is, of all others, that againſt which it is at the preſent moment the moſt important to warn my countrywomen. As a ſpecimen of the German drama, it may not be unſeaſonable to offer a few remarks on the admired play of the Stranger. In this piece, the character of an *adultreſs*, which, in all periods of the world, ancient as well as modern, in all countries, heathen as well as Chriſtian, has hitherto been held in deteſtation, and has never been introduced but to be reprobated, is, for the firſt time, preſented to our view in the moſt pleaſing and faſcinating colours. The heroine is a woman who forſook a huſband, the moſt affectionate and the moſt amiable, and lived for ſome time in the moſt criminal commerce with her ſeducer. Repenting at length of her crime, ſhe buries herſelf in retirement. The talents of the poet, during the whole piece, are exerted in attempting to render this woman the object, not only of the compaſſion and forgiveneſs, but of the eſteem and affection, of the audience.

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The injured huſband, convinced of his wife's repentance, forms a reſolution, which every man of true feeling and Chriſtian piety will probably approve. He forgives her offence, and promiſes her through his life his advice, protection, and fortune, together with every thing which can alleviate the miſery of her ſituation; but refuſes to place her in the ſituation of his wife. But this is not ſufficient for the German author. His efforts are employed, and it is to be feared but too ſucceſsfully, in making the audience conſider the huſband as an unrelenting ſavage, while they are led by the art of the poet, anxiouſly to wiſh to ſee an adultreſs reſtored to that rank of women, who have not violated the moſt ſolemn covenant that can be made with man, nor diſobeyed one of the moſt poſitive laws which has been enjoined by God.

About the ſame time that this firſt attempt at repreſenting an adultreſs in an exemplary light was made by a German dramatiſt, which forms an era in manners; a direct vindication of adultery was for the firſt time attempted by a *woman*, a profeſſed admirer and imitator of the German ſuicide Werter. The Female Werter, as ſhe is ſtyled by her biographer, aſſerts in a work, entitled "The Wrongs of Woman," that adultery is juſtifiable, and that the reſtrictions placed on it by the laws of England conſtitute part of the *wrongs of woman*.

But let us take comfort. Theſe fervid pictures are not yet generally realiſed. Theſe atrocious principles are not yet adopted into common practice. Though corruptions ſeem to be pouring in upon us from every quarter, yet there is ſtill left among us a diſcriminating judgment. Clear and ſtrongly marked diſtinctions between right and wrong ſtill ſubſiſt. While we continue to cheriſh this ſanity of mind, the caſe is not deſperate.

Though the crime above alluded to, the growth of which always exhibits the moſt irrefragable proof of the diſſoluteneſs of public manners; though this crime, which cuts up order and virtue by the roots, and violates the ſanctity of vows, is awfully increaſing, yet, thanks to the ſurviving efficacy of a holy religion, to the operations of virtuous laws, and the energy and unſhaken integrity with which theſe laws are now adminiſtered; and ſtill more perhaps to a ſtandard of morals which continues in force, when the principles which ſanctioned it are no more; this crime, in the female ſex at leaſt, is ſtill held in juſt abhorrence: if it be practiſed, it is not honourable; if it be committed, it is not juſtified; we do not yet affect to palliate its turpitude; as yet it hides its abhorred head in lurking privacy; and reprobation hitherto follows its publicity.

"To every thing there is a ſeaſon, and a time for every purpoſe under heaven;" ſaid the wiſe man; but he ſaid it before the invention of baby-balls. This modern device is a ſort of triple conſpiracy againſt the innocence, the health, and the happineſs, of children; thus, by factitious amuſements, to rob them of a reliſh for the ſimple joys, the unbought delights, which naturally belong to their blooming ſeaſon, is like blotting out ſpring from the year. To ſacrifice the true and proper enjoyments of ſprightly and happy children, is to make them pay a dear and diſproportionate price for their artificial pleaſures. They ſtep at once from the nurſery to the ball-room, and, by a prepoſterous change of habits, are thinking of dreſſing themſelves, at an age when they uſed to be dreſſing their dolls.

dolls. Inſtead of bounding with the unreſtrained freedom of little wood-nymphs over hill and dale, their cheeks flufhed with health and their hearts overflowing with happineſs, theſe *gay* little creatures are ſhut up all the morning, demurely practiſing the *pas grave*, and tranſacting the ſerious buſineſs of acquiring a new ſtep for the evening, with more coſt of time and pains than it would have taken them to acquire twenty new ideas.

Thus they loſe the amuſements which naturally belong to their ſmiling period, and unnaturally anticipate thoſe pleaſures (ſuch as they are) which would come in, too much of courſe, on their introduction into faſhionable life. The true pleaſures of childhood are cheap and natural; for every object ſeems with delight to eyes and hearts new to the enjoyment of life: nay, the hearts of healthy children abound with a general diſpoſition to mirth and joyfulneſs, even without a ſpecific object to excite it; like our firſt parent, in the world's firſt ſpring, when all was new, and freſh, and gay, about him. Only furniſh them with a few ſimple and harmleſs materials, and a little, but not too much, leiſure, and they will manufacture their own pleaſures with more ſkill, and ſucceſs, and ſatisfaction, than they will receive from all that your money can purchaſe. Their bodily recreations ſhould be ſuch as will promote their health, quicken their activity, enliven their ſpirits, whet their ingenuity, and qualify them for their mental work. But, if you begin thus early to create wants, to invent gratifications, to multiply deſires, to waken dormant ſenſibilities, to ſtir up hidden fires, you are ſtudiouſly laying up for your children a ſtore of premature caprice, and irritability and diſcontent.

While childhood preſerves its native ſimplicity, every little change is intereſting, every gratification is a luxury; a ride or a walk will be a delightful amuſement to a child in her natural ſtate; but, it will be dull and taſteleſs to a ſophiſticated little creature, nurſed in theſe forced, and coſtly, and vapid, pleaſures. Alas! that we ſhould throw away this firſt grand opportunity of working into a practical habit, the moral of this important truth, That the chief ſource of human diſcontent is to be looked for, not in our real but in our factitious wants; not in the demands of nature, but in the artificial cravings of deſire!

When one ſees the growing zeal to crowd the midnight ball with theſe pretty fairies, one would be almoſt tempted to fancy it was a kind of pious emulation among the mothers to cure their infants of a fondneſs for vain and fooliſh pleaſures, by tiring them out by this premature familiarity with them; and, that they were actuated by ſomething of the ſame principle, which led the Spartans to introduce their ſons to ſcenes of riot, that they might conceive an early diſguſt at vice: or poſſibly, that they imitated thoſe Scythian mothers who uſed to plunge their new-born infants into the flood, thinking none to be worth ſaving who could not ſtand this early ſtruggle for their lives: the greater part indeed, as it might have been expected, periſhed; but the parents took comfort, that, if many were loſt, the few who eſcaped would be the ſtronger for having been thus expoſed.

To behold Lilliputian coquettes projecting dreſſes, ſtudying colours, aſſorting ribbands and feathers, their little hearts beating with hopes about partners, and fears about rivals; and to ſee their freſh cheeks pale after the midnight ſupper, their aching heads and unbraced

bracced nerves diſqualifying the little languid beings for the next day's taſk, and to hear the grave apology, "that it is owing to the wine, the crowd, the heated room of the laſt night's ball;" all this, I ſay, would really be as ludicrous, if the miſchief of the thing did not take off from the merriment of it, as any of the ridiculous and prepoſterous diſproportions in the diverting travels of Captain Lemuel Gulliver.

Under a juſt impreſſion of the evils which we are ſuſtaining from the principles and the practices of *modern* France, we are apt to loſe ſight of thoſe deep and laſting miſchiefs which ſo long, ſo regularly, and ſo ſyſtematically, we have been importing from the ſame country, though in another form and under another government. In one reſpect, indeed, the firſt were the more formidable, becauſe we embraced the ruin without ſuſpecting it; while we defeat the malignity of the latter, by detecting the turpitude, and defending ourſelves againſt it. This is not the place to deſcant on that levity of manners, that contempt of the ſabbath, that familiarity with looſe principles, and thoſe relaxed notions of conjugal fidelity, which have often been tranſplanted into this country by women of faſhion as a too common effect of a long reſidence in that: but it is peculiarly ſuitable to my ſubject, to advert to another domeſtic miſchief derived from the ſame foreign extraction: I mean, the riſks that have been run, and the ſacrifices which have been made, in order to furniſh our young ladies with the means of acquiring the French language in the greateſt poſſible purity. Perfection in this accompliſhment has been ſo long eſtabliſhed as the ſupreme object, ſo long conſidered as the predominant excellence, to which all other excellences muſt bow down, that it would be hopeleſs to attack a law which faſhion has immutably decreed, and which has received the ſtamp of long preſcription. We muſt therefore be contented with expreſſing a wiſh, that this indiſpenſable perfection could have been attained at the expence of ſacrifices leſs important.

It is with the greater regret I animadvert on this and ſome other prevailing practices, as they are errors into which the wiſe and reſpectable have, through want of conſideration, or rather through want of firmneſs to reſiſt the tyranny of faſhion, ſometimes fallen. It has not been unuſual, when mothers of rank and reputation have been aſked how they ventured to intruſt their daughters to foreigners, of whoſe principles they knew nothing, except that they were Roman catholics, to anſwer, "That they had taken care to be ſecure on that ſubject, for that it had been ſtipulated that the queſtion of religion ſhould never be agitated between the teacher and the pupil." This, it muſt be confeſſed, is a moſt deſperate remedy; it is like ſtarving to death to avoid being poiſoned. And one cannot help trembling for the event of that education, from which religion, as far as the governeſs is converned, is thus formally and ſyſtematically excluded. Surely, it would not be exacting too much, to ſuggeſt, at leaſt, that an attention no leſs ſcrupulous ſhould be exerted to inſure the character of our children's inſtructor for piety and knowledge, than is thought neceſſary to aſcertain that ſhe has nothing *patois* in her dialect.

I would rate a correct pronunciation and an elegant phraſeology at their juſt price, and I would not rate them low; but I would not offer up principle as a victim to ſounds and accents. And the matter

matter is now made more eaſy; for whatever diſgrace it might once have brought on an Engliſh lady, to have had it ſuſpected from her accent that ſhe had the misfortune not to be born in a neighbouring country; ſome recent events may ſerve to reconcile her to the ſuſpicion of having been bred in her own: a country, to which (with all its faults, which are many!) the whole world is looking up with envy and admiration, as the ſeat of true glory and of comparative happineſs: a country, in which the exile, driven out by the crimes of his own, finds a home! a country, to obtain the protection of which it was claim enough to be unfortunate; and no impediment to have been the ſubject of her direct foe! a country, which in this reſpect, humbly imitating the Father of compaſſion, when it offered mercy to a ſuppliant enemy, never conditioned for merit, nor inſiſted on the virtues of the miſerable as a preliminary to its own bounty.

"Perſons, having been accuſtomed from their cradles to learn words before they know the ideas for which they ſtand, uſually continue to do ſo all their lives, never taking the pains to ſettle in their minds the determined ideas which belong to them. This want of a preciſe ſignification in their words, when they come to reaſon, *eſpecially in moral matters*, is the cauſe of very obſcure and uncertain notions. They uſe theſe undetermined words confidently, without much troubling their heads about a certain fixed meaning, whereby, beſides the eaſe of it, they obtain this advantage, that, as in ſuch diſcourſe they are ſeldom in the right, ſo they are as ſeldom to be convinced that they are in the wrong, it being juſt the ſame to go about to draw thoſe perſons out of their miſtakes, who have no ſettled notions, as to diſpoſſeſs a vagrant of his habitation who has no ſettled abode. The chief end of language being to be underſtood, words ſerve not for that end when they do not excite in the hearer the ſame idea which they ſtand for in the mind of the ſpeaker."

I have choſen to ſhelter myſelf under the broad ſanction of the great author here quoted (Locke), with a view to apply this rule in philology to a moral purpoſe; for it applies to the veracity of converſation as much as to its correctneſs; and as ſtrongly recommends unequivocal and ſimple truth, as accurate and juſt expreſſion. Scarcely any one perhaps has an adequate conception, how much clear and correct expreſſions favour the elucidation of truth; and the ſide of truth is obviouſly on the ſide of morals; it is in fact one and the ſame cauſe: and it is of courſe the ſame cauſe with that of religion alſo.

It is therefore no worthleſs part of education to ſtudy the preciſe meaning of words, and the appropriate ſignification of language. To this end, I know no better method than to accuſtom young perſons very early to define common words and things, for, as definition ſeems to lie at the root of correctneſs, to be accuſtomed to define Engliſh words in Engliſh would improve the underſtanding more than barely to know what theſe words are called in French or Italian. Or rather one uſe of learning other languages is, becauſe definition is often involved in etymology; that is, ſince many Engliſh words take their derivation from foreign languages, they cannot be ſo accurately underſtood without ſome knowledge of thoſe languages: but preciſion of any kind too ſeldom finds its way into the education of women.

It is perhaps going out of my province to obſerve, that it might be well if young *men* alſo, before they entered on the world, were to be furniſhed with correct definitions of certain words, the uſe of which is rather ambiguous. For inſtance; they ſhould be provided with a good definition of the word *honour* in the faſhionable ſenſe, ſhewing what vices it includes, and what virtues it does not include: the term *good company*, which even the courtly Petronius of our days has defined as ſometimes including not a few immoral and diſreputable characters: *religion*, which, in the various ſenſes aſſigned it by the world, ſometimes means ſuperſtition, ſometimes fanaticiſm, and ſometimes a mere diſpoſition to attend on any kind of form of worſhip: the word *goodneſs*, which is made to mean every thing that is not notoriouſly bad; and ſometimes even that too, if what is notoriouſly bad be accompanied by good humour, pleaſing manners, and a little alms-giving. By theſe means they would go forth armed againſt many of the falſe opinions, which through the abuſe or ambiguous meaning of words paſs ſo current in the world.

But to return to the youthful part of that ſex which is the more immediate object of this little work. With correct definition they ſhould alſo be taught to ſtudy the ſhades of words, and this not merely with a view to accuracy of expreſſion, but to moral truth.

It may be thought ridiculous to aſſert, that morals have any connection with the purity of language, or that the preciſion of truth may be violated through defect of critical exactneſs in the three degrees of compariſon: yet how frequently do we hear from the dealers in ſuperlatives, of "moſt admirable, ſuper-excellent, and quite perfect," people, who, to plain perſons, not bred in the ſchool of exaggeration, would appear mere common characters, not riſing above the level of mediocrity! By this negligence in the juſt application of words, we ſhall be as much miſled by theſe trope and figure ladies, when they degrade as when they panegyrize; for, to a plain and ſober judgment, a tradeſman may not be "the moſt good-for-nothing fellow that ever exiſted," merely becauſe it was impoſſible for him to execute in an hour an order which required a week: a lady may not be "the moſt hideous fright the world ever ſaw," though the make of her gown may have been obſolete for a month: nor may one's young friend's father be "a monſter of cruelty," tho' he may be a quiet gentleman who does not chooſe to live at watering-places, but likes to have his daughter ſtay at home with him in the country.

But, of all the parts of ſpeech the interjection is the moſt abundantly in uſe with the hyperbolical fair ones. Would it could be added that theſe emphatical expletives (if I may make uſe of a contradictory term) were not ſometimes tinctured with prophaneneſs! Though I am perſuaded that idle habit is more at the bottom of this deep offence than intended impiety, yet there is ſcarcely any error of youthful talk which wants ſeverer caſtigation. And a habit of exclamation ſhould be rejected by poliſhed people as vulgar, even if it were not abhorred as profane.

The converſation of young females is alſo in danger of being overloaded with epithets. As in the warm ſeaſon of youth hardly any thing is ſeen in the true point of viſion, ſo hardly any thing is named in naked ſimplicity; and the very ſenſibility of the feelings is partly a cauſe of the extravagance of the expreſſion. But here,

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as in other points, the ſacred writers, particularly of the New Teſtament, preſent us with the pureſt models: and its natural and unſtudied ſtyle of expreſſion is perhaps not the meaneſt evidence of the truth of the Goſpel. There is throughout the whole narratives, no overcharged character, no elaborate deſcription, nothing ſtudiouſly emphatical, as if truth of itſelf were weak, and wanted to be helped out. There is little panegyric, and leſs invective: none but on great, and awful, and juſtifiable, occaſions. The authors record their own faults with the ſame honeſty as if they were the faults of other men, and the faults of other men with as little amplification as if they were their own. There is perhaps no book in which adjectives are ſo ſparingly uſed. A modeſt ſtatement of the fact, with no colouring and little comment, is the example held out to us for correcting the exuberances of paſſion and of language, by that divine volume which furniſhes us with the ſtill more important rule of faith and ſtandard of practice. Nor is the truth lowered by feebleneſs; for with all this plainneſs there is ſo much force, that a few ſimple touches and artleſs ſtrokes of ſcripture character convey a ſtronger outline of the perſon delineated, than is ſometimes given by the moſt elaborate portrait of more artificial hiſtorians.

If it be objected to this remark, that many parts of the ſacred writings abound in a lofty, figurative, and even hyperbolical, ſtyle; this objection applies chiefly to the writings of the Old Teſtament, and to the prophetical and poetical parts of that. But this metaphorical and florid ſtyle is diſtinct from the inaccurate and overſtrained expreſſion we have been cenſuring; for that only is inaccuracy which leads to a falſe and inadequate conception in the reader or hearer. The lofty ſtyle of the eaſtern, and of other heroic poetry, does not ſo miſlead; for the metaphor is underſtood to be a metaphor, and the imagery is underſtood to be ornamental. The ſtyle of the ſcriptures of the Old Teſtament, are not, it is true, plain in oppoſition to figurative, nor ſimple in oppoſition to florid; but it is plain and ſimple in the beſt ſenſe: it raiſes no falſe idea: it gives an exact impreſſion of the thing it means to convey: and its very tropes and figures, though bold, are never unnatural or affected. Even when it exaggerates, it does not miſrepreſent; if it be hyperbolical, it is ſo either in compliance with the genius of Oriental language, or in compliance with contemporary cuſtoms, or becauſe the ſubject is one which will be moſt forcibly impreſſed by a bold figure. The loftineſs of the expreſſion deducts nothing from the truth of the circumſtance, and animates the reader without miſleading him.

ACCOUNT OF A SUBMARINE FOREST ON THE EAST COAST OF ENGLAND. By JOSEPH CORREA DE SERRA, LL. D. F. R. S. and A. S.—PUBLISHED in the PHILOSOPHICAL TRANSACTIONS of 1799.

IN geology, more perhaps than in any other branch of natural hiſtory, there exiſts a neceſſity of ſtrictly ſeparating the facts obſerved from the ideas which, in order to explain them, may occur to the mind of the obſerver. In the preſent ſtate of the ſcience, every well-aſcertained fact increaſes our ſtill narrow ſtock of real knowledge; when, on the contrary, the reaſonings we are enabled to make

make are at beſt but ingenious gueſſes, which too often bias and miſlead the judgment. I ſhall, therefore, endeavour in this paper to give, firſt, a mere deſcription of the object unmixed with any ſyſtematical ideas, and ſhall afterwards offer ſuch conjectures on its cauſes as ſeem to me to be fairly grounded on obſervation.

It was a common report in Lincolnſhire, that a large extent of iſlets of moor ſituated along its coaſt, and viſible only in the loweſt ebbs of the year, was chiefly compoſed of decayed trees. The iſlets are marked in Mitchell's chart of that coaſt by the name of *clay huts*; and the village of Huttoft, oppoſite to which they principally lie, ſeems to have derived its name from them. In the month of September 1796 I went to Sutton, on the coaſt of Lincolnſhire, in the company of the Right Hon. the Preſident of the Royal Society, in order to examine their nature and extent. The 19th of the month, being the firſt day after the equinoctial full moon, when the loweſt ebbs were to be expected, we went in a boat about half paſt twelve at noon, and ſoon ſet foot upon one of the largeſt iſlands then appearing. Its expoſed ſurface was about thirty yards long, and twenty-five wide, when the tide was at the loweſt. A great number of ſmaller iſlets were viſible around us, chiefly to the eaſtward and ſouthward; and the fiſhermen, whoſe authority in this point is very competent, ſay, that ſimilar moors are to be found along the whole coaſt, from Skegneſs to Grimſby, particularly off Addlethorpe and Mablethorpe. The channels dividing the iſlets were, at the time we ſaw them, wide, and of various depths; the iſlands themſelves ranging generally from eaſt to weſt in their largeſt dimenſions.

We viſited them again in the ebbs of the 20th and 21ſt; and, though it did not generally ebb ſo far as we expected, we could notwithſtanding aſcertain that they conſiſted almoſt entirely of roots, trunks, branches and leaves of trees and ſhrubs, intermixed with ſome leaves of aquatic plants. The remains of ſome of theſe trees were ſtill ſtanding on their roots, while the trunks of the great part lay ſcattered on the ground in every poſſible direction. The barks of trees and roots appeared generally as freſh as when they were growing; in that of the branches particularly, of which a great quantity was found, even the thin ſilver membranes of the outer ſkin were diſcernible. The timber of all kinds, on the contrary, was decompoſed, and ſoft in the greateſt part of the trees: in ſome, however, it was firm, eſpecially in the roots. The people of the country have often found among them very ſound pieces of timber, fit to be employed for ſeveral economical purpoſes.

The ſorts of wood which are ſtill diſtinguiſhable, are, birch, fir, and oak. Other woods evidently exiſt in theſe iſlets, of ſome of which we found the leaves in the ſoil; but our preſent knowledge of the comparative anatomy of timber is not ſo far advanced as to afford us the means of pronouncing with confidence reſpecting their ſpecies. In general the trunks, branches, and roots, of the decayed trees were conſiderably flattened; which is a phenomenon obſerved in the *ſurtarbrand*, or foſſil wood of Iceland, and which Scheuchzer remarked alſo in the foſſil wood found in the neighbourhood of the lake of Thun in Switzerland.

The ſoil to which the trees are affixed, and in which they grew, is a ſoft greaſy clay; but for many inches above its ſurface, the ſoil is compoſed of rotten leaves ſcarcely diſtinguiſhable to the eye, many

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of which may be ſeparated by putting the ſoil in water, and dexterouſly and patiently uſing a ſpatula or blunt knife. By this method I obtained ſome perfect leaves of *Ilex aquifolium*, which are now in the herbarium of the Right Honourable Sir Joſeph Banks; and ſome other leaves, which, though leſs perfect, ſeem to belong to ſome ſpecies of willow. In this ſtratum of rotten leaves we could alſo diſtinguiſh ſome roots of *Arundo phragmites*.

Theſe iſlets, according to the moſt accurate information, extend at leaſt twelve miles in length, and about a mile in breadth, oppoſite to Sutton ſhore. The water without them, towards the ſea, generally deepens ſuddenly, ſo as to form a deep bank. The channels between the ſeveral iſlets, when the iſlets are dry, in the loweſt ebbs of the year, are from four to twelve feet deep: their bottoms are clay or ſand, and their direction is generally from eaſt to weſt.

A well, dug at Sutton by Joſhua Searby, ſhews that a moor of the ſame nature is found under ground in that part of the country at the depth of ſixteen feet, conſequently very nearly on the ſame level with that which conſtitutes the iſlets. The diſpoſition of the ſtrata was found to be nearly as follows: Clay, 16 feet; moor, ſimilar to that of the iſlets, 3 to 4 ditto; ſoft moor, like the ſcowerings of a ditch bottom, mixed with ſhells and ſilt, 20 feet; marly clay, 1 foot; chalky rock, from 1 to 2 feet; clay, 31 yards; gravel and water; the water has a chalybeate taſte. In order to aſcertain the courſe of this ſubterraneous ſtratum of decayed vegetables, Sir Joſeph Banks directed a boring to be made in the fields belonging to the Royal Society in the pariſh of Mablethorpe. Moor of a ſimilar nature to that of Searby's well, and the iſlets, was found, very nearly on the ſame level, about four feet thick, and under a ſoft clay.

The whole appearance of the rotten vegetables, we obſerved, perfectly reſembles, according to the remark of Sir Joſeph Banks, the moor which, in Blankeney Fen and in other parts of the Eaſt Fen in Lincolnſhire, is thrown up in the making of banks; barks, like thoſe of the birch-tree, being there alſo abundantly found. The moor extends over all the Lincolnſhire fens, and has been traced as far as Peterborough, more than ſixty miles to the ſouth of Sutton. On the north ſide, the moory iſlets, according to the fiſhermen, extend as far as Grimſby, ſituated on the ſouth ſide of the Humber: and it is a remarkable circumſtance, that in the large tracts of low land which lie on the ſouth banks of that river, a little above its mouth, there is a ſubterraneous ſtratum of decayed trees and ſhrubs exactly like thoſe we have obſerved at Sutton; particularly at Axolme iſle, a tract of ten miles in length by five in breadth; and at Hatfield Chace, which comprehends one hundred and eighty thouſand acres. Dugdale had long ago made this obſervation in the firſt of theſe places; and De la Pryme in the ſecond. The roots are there, likewiſe, ſtanding in the places where they grew: the trunks lie proſtrate. The woods are of the ſame ſpecies as at Sutton. Roots of aquatic plants and reeds are likewiſe mixed with them; and they are covered by a ſtratum of ſome yards of ſoil, the thickneſs of which, though not aſcertained with exactneſs by the above mentioned obſervers, we may eaſily conceive to correſpond with what covers the ſtratum of decayed wood at Sutton, by the circumſtances of the roots being (according to Mr. Richardſon's obſervations) only viſible when the water is low, where a channel was cut, which has left them uncovered.

Little

Little doubt can be entertained of the moory iſlets of Sutton being a part of this extenſive and ſubterraneous ſtratum, which, by ſome inroad of the ſea, has there been ſtripped of its covering of ſoil. The identity of the levels; that of the ſpecies of trees; the roots of theſe affixed, in both, to the ſoil where they grew; and, above all, the flattened ſhape of the trunks, branches, and roots, found in the iſlets (which can only be accounted for by the heavy preſſure of a ſuperinduced ſtratum), are ſufficient reaſons for this opinion.

Such a wide-ſpread aſſemblage of vegetable ruins, lying almoſt in the ſame level, and that level generally under the common mark of low-water, muſt naturally ſtrike the obſerver, and give birth to the following queſtions: 1. What is the epoch of this deſtruction? 2. By what agency was it effected?

In anſwer to theſe queſtions, I will venture to ſubmit the following reflections: The foſſil remains of vegetables hitherto dug up in ſo many parts of the globe, are, on a cloſe inſpection, found to belong to two different ſtates of our planet. The parts of vegetation, and their impreſſions, found in mountains, of a cotaceous, ſchiſtous, or even ſometimes of a calcareous, nature, are chiefly of plants now exiſting between the tropics, which could neither have grown in the latitudes in which they are dug up, nor have been carried and depoſited there by any of the acting forces under the preſent conſtitution of nature. The formation, indeed, of the very mountains in which they are buried, and the nature and diſpoſition of the materials which compoſe them, are ſuch as we cannot account for by any actions and re-actions which in the actual ſtate of things take place on the ſurface of the earth. We muſt neceſſarily recur to that perod in the hiſtory of our planet, when the ſurface of the ocean was at leaſt ſo much above its preſent level as to cover even the ſummits of thoſe ſecondary mountains which contain the remains of tropical plants. The changes which theſe vegetables have ſuffered in their ſubſtance is almoſt total; they commonly retain only the external configuration of what they were. Such is the ſtate in which they are found in England by Llwyd; in France by Juſſieu; and in the Netherlands by Burtin; not to mention inſtances in more diſtant countries. Some of the impreſſions or remains of plants found in ſoils of this nature, which were, by the more ancient and enlightened oryctologiſts, ſuppoſed to belong to plants actually growing in temperate and cold climates, ſeem, on accurate inveſtigation, to have been part of exotic vegetables. In fact, whether we ſuppoſe them to have grown near the ſpot where they are found, or to have been carried thither from different parts by the force of an impelling flood, it is equally difficult to conceive how organized beings, which, in order to live, require ſuch a vaſt difference in temperature and in ſeaſons, could live on the ſame ſpot, or how their remains could (from climates ſo widely diſtant) be brought together in the ſame place by one common diſlocating cauſe. To this ancient order of foſſil vegetables belong whatever retains a vegetable ſhape, found in or near coal mines, and (to judge from the places where they have been found) the greater part of the agatized woods. But from the ſpecies and preſent ſtate of the trees, which are the ſubject of this memoir, and from the ſituation and nature of the ſoil in which they are found, it ſeems very clear that they do not belong to the primeval order of vegetable ruins.

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The ſecond order of foſſil vegetables, comprehends thoſe which are found in the ſtrata of clay or ſand; materials which are the reſult of ſlow depoſitions of the ſea and of rivers, agents ſtill at work under the preſent conſtitution of our planet. Theſe vegetable remains are found in ſuch flat countries as may be conſidered to be of a new formation. The vegetable organization ſtill ſubſiſts, at leaſt in part; and their vegetable ſubſtance has ſuffered a change only in colour, ſmell, or conſiſtence; alterations which are produced by the development of their oily and bituminous parts, or by their natural progreſs towards rottenneſs. Such are the foſſil vegetables found in Cornwall by Borlaſe; in Eſſex by Derham; in Yorkſhire by De la Pryme and Richardſon; and in foreign countries by other naturaliſts. Theſe vegetables are found at different depths, ſome of them much below the preſent level of the ſea, but in clayey or ſandy ſtrata (evidently belonging to modern formation); and have no doubt been carried from their original place, and depoſited there by the force of great rivers or currents, as it has been obſerved with reſpect to the Miſſiſſippi. In many inſtances, however, theſe trees and ſhrubs are found ſtanding on their roots, and generally in low or marſhy places above, or very little below, the level of the ſea.

To this laſt deſcription of foſſil vegetables the decayed trees here deſcribed certainly belong. They have not been tranſported by currents or rivers; but, though ſtanding in their native ſoil, we cannot ſuppoſe the level in which they are found to be the ſame as that in which they grew. It would be impoſſible for any of theſe trees or ſhrubs to vegetate ſo near the ſea, and below the common level of its water; the waves would cover ſuch tracts of land, and hinder any vegetation. We cannot conceive that the ſurface of the ocean has ever been lower than it now is; on the contrary, we are led, by numberleſs phenomena, to believe that the level of the water in our globe is now below what it was in former periods: we muſt therefore conclude, that the foreſt here deſcribed grew in a level high enough to permit its vegetation; and that the force (whatever it was) which deſtroyed it, lowered the level of the ground where it ſtood.

There is a force of ſubſidence (particularly in ſoft ground), which, being a natural conſequence of gravity ſlowly though perpetually operating, has its action ſometimes quickened and rendered ſudden by extraneous cauſes, for inſtance by earthquakes. The ſlow effects of this force of ſubſidence have been accurately remarked in many places: examples alſo of its ſudden action are recorded in almoſt every hiſtory of great earthquakes. The ſhores of Alexandria, according to Dolomieu's obſervations, are a foot lower than they were in the time of the Ptolemies. Donati, in his Natural Hiſtory of the Adriatic, has remarked, ſeemingly with great accuracy, the effects of this ſubſidence at Venice; at Pola in Iſtria; at Liſs, Bua, Zara, and Diclo, on the coaſt of Dalmatia. In England, Borlaſe has given, in the Philoſophical Tranſactions, a curious obſervation of a ſubſidence, of at leaſt ſixteen feet, in the ground between Sampſon and Treſcaw iſlands in Scilly. The ſoft and low grounds between the towns of Thorne and Gowle in Yorkſhire, a ſpace of many miles, has ſo much ſubſided in latter times, that ſome old men of Thorne affirmed, "that, whereas they could before ſee little of the ſteeples (of Gowle), they now ſee the church-yard wall." The inſtances of ſimilar ſubſidence, which might be mentioned, are innumerable.

The force of ſubſidence, ſuddenly acting by means of ſome earthquake, ſeems to me the moſt probable cauſe to which the uſual ſubmarine ſituation of the foreſt we are ſpeaking of may be aſcribed. It affords a ſimple eaſy explanation of the matter; its probability is ſupported by numberleſs inſtances of ſimilar events; and it is not liable to the ſtrong objections which exiſt againſt the hypotheſis of the alternate depreſſion and elevation of the level of the ocean; an opinion which, to be credible, requires the ſupport of a great number of proofs leſs equivocal than thoſe which have hitherto been urged in its favour, even by the genius of a Lavoiſier.

The ſtratum of ſoil, ſixteen feet thick, placed above the decayed trees, ſeems to remove the epoch of their ſinking and deſtruction far beyond the reach of any hiſtorical knowledge. In Cæſar's time, the level of the North Sea appears to have been the ſame as in our days. He mentions the ſeparation of the Wahal branch of the Rhine, and its junction to the Meuſe; noticing the then exiſting diſtance from that junction to the ſea, which agrees, according to d'Anville's inquiries, with the actual diſtance. Some of the Roman roads, conſtructed, according to the order of Auguſtus, under Agrippa's adminiſtration, leading to the maritime town of Belgium, ſtill exiſt, and reach the preſent ſhore. The deſcription which Roman authors have left us, of the coaſts, ports, and mouth of rivers, on both ſides of the north ſea, agree in general with their preſent ſtate; except in the places ravaged by the inroads of this ſea, more apt, from its force, to deſtroy the ſurrounding countries than to increaſe them.

An exact reſemblance exiſts between Maritime Flanders and the oppoſite coaſt of England, both in point of elevation above the ſea, and of the internal ſtructure and arrangement of the ſoils. On both ſides, ſtrata of clay, ſilt, and ſand, (often mixed with decayed vegetables,) are found near the ſurface; and, in both, theſe ſuperior materials cover a very deep ſtratum of blueiſh or dark-coloured clay, unmixed with extraneous bodies. On both ſides they are the lowermoſt part of the ſoil, exiſting between two ridges of high lands, on their reſpective ſides of the ſame narrow ſea. Theſe two countries are certainly coeval; and whatever proves that Maritime Flanders has been for many ages out of the ſea, muſt, in my opinion, prove alſo that the foreſt we are ſpeaking of was long before that time deſtroyed and buried under a ſtratum of ſoil. Now it ſeems proved from hiſtorical records, carefully collected by ſeveral learned members of the Bruſſels Academy, that no material change has happened to the lowermoſt part of Maritime Flanders during the period of the laſt two thouſand years.

I am therefore inclined to ſuppoſe the original cataſtrophe which buried this foreſt to be of very ancient date; but I ſuſpect the inroad of the ſea, which uncovered the decayed trees of the iſlands of Sutton, to be comparatively recent. The ſtate of the leaves and of the timber, and alſo the tradition of the neighbouring people, concur to ſtrengthen this ſuſpicion. Leaves, and other delicate parts of plants, though they may be long preſerved in a ſubterraneous ſituation, cannot remain uninjured when expoſed to the action of the waves and of the air. The people of the country believe that their pariſh-church once ſtood on the ſpot where the iſlets now are, and was ſubmerged by the inroads of the ſea, and that at low water their anceſtors could even diſcover its ruins; and that their preſent church was built to

ſupply

ſupply the place of that which the waves waſhed away, and that even their preſent clock belonged to the old church. So many concomitant circumſtances, though weak teſtimonies, incline me to believe their report; and to ſuppoſe that ſome of the ſtormy inundations of the North Sea, which in theſe laſt centuries have waſhed away ſuch large tracts of land on its ſhores, took away a ſoil reſting on clay, and at laſt uncovered the trees which are the ſubject of this paper.

OF THE COTTON MANUFACTURE IN LANCASHIRE.

COTTON, it is well known, is the produce of a ſhrub, in the warmer climates of the Eaſt and Weſt Indies, and even in the more temperate countries which border the Levant. It comes to us without any farther preparation than having been carefully picked out of the pod in which it grows; but ſtill much dirt, huſk, and other impurities, remain in it. This is firſt ſeparated by women, who beat the cotton with ſticks upon hurdles, and pick out the more groſs impurities with their fingers. It is then taken to the carding engine, where it is firſt ſcribbled, as the wool-carder would ſay, and afterwards, divided into perpetual cardings, which are caught by, and coiled round the ſides of, long tin cylinders. Theſe coils are taken to the mules, firſt to be roved, which anſwers to ſtubbing, and afterwards to be ſpun into threads of any requiſite fineneſs. The invention of the mules forms quite an epoch in the hiſtory of the cotton trade. A vaſt improvement has been made, about thirty years ago, by the introduction of the ſpinning jennies, by which from twenty to forty ſpindles were turned at a time. Still, however, the rovings, or coarſe half-twiſted threads, partaking ſomewhat of the nature of cardings, though approaching in ſome degree to ſpun twiſt, were obliged to be prepared by the hand-wheel. The invention of mules entirely ſupplied this defect; and, while it enabled the ſpinner to prepare her rovings as faſt as ſhe before could ſpin, at the ſame time it put her in a way of performing her farther work much more expeditiouſly and completely. The machine is called a *mule*, either becauſe it is a kind of machine which might eaſily be turned by a mule, or, more probably, becauſe it is a ſort of mongrel, partaking of the nature both of carding and ſpinning, or uniting together the action both of the roller and ſpindle. It conſiſts of three ſets of fluted braſs rollers, the flutes of which turn into each other: the firſt ſet goes faſter than the ſecond, and the ſecond faſter than the third, between which, when the roll of carded cotton enters, it is a little lengthened out, ſtill more by the ſecond, and farther ſtill by the firſt, after paſſing which, it is ſlightly twiſted by the rapid circular motion on its axis, communicated by a leather band to a perpendicular tin cylinder, into which it falls. If the roving be not made thin enough by the firſt operation, it is made to undergo a repetition of it, and it is then carried to the ſpinning mules; which differ from the former only in this, that when the threads have paſſed the rollers, they are drawn out and twiſted by a courſe of ſpindles, which are ſet in motion after a ſufficient quantity of the roving has paſſed the rollers, which are themſelves, at this time ſtopped. The advantage of this mode of preparing the threads is underſtood to be, that the fibres of the cotton are all laid longitudinally, and in as ſmall a number as is wanted, before they are begun to be much twiſted; by which means, threads

of any required fineneſs are made much ſtronger than they were from rovings prepared upon the ſpindle, which twiſted them too much in the firſt inſtance; and, in the ſubſequent proceſſes for rendering them finer, many of the fibres were neceſſarily broken. On one of theſe mules 240 threads are often ſpun at once, and two of them may be managed by one woman, with a child to each to tie the threads which may occaſionally break. A large factory for theſe operations uſually conſiſts of a vaſt cellar to hold the raw materials, of a ground floor for the pickers and beaters; and, in the upper floors, firſt teazing and carding engines, then roving machines, afterwards mules, and laſtly, machines for winding the thread or twiſt; the whole occupying a building of ſix or ſeven ſtories, and all moved, either by a large water-wheel or by a ſmall fire-engine, which, if of Boulton and Watt's conſtruction, occaſions very little inconvenience to the neighbourhood, as it conſumes nearly all its ſmoke.—For winding the thread regularly off the ſpindles upon bobbins, various contrivances are in uſe: none, however, appears more ſimple than a heart-ſhaped axis, which moves the bobbins to the right or left, according to the poſition of the apex or the baſe of the heart. Other portions of the thread are wound in quills for the ſhuttle; and others, again, are formed into hanks, ſome of which are tightly bound round at certain intervals, previous to their being dyed, in order to prevent the parts ſo tied from taking the colour. This is done, that the threads may be diſpoſed in the warp, ſo as to produce the clouds which are ſeen in various ſpecies of the cotton goods, particularly gingams. The only colours which the cotton manufacturer has hitherto been able to render ſo permanent as to withſtand the effect of bleaching, are, the Turkey-red, the dark blue, and the buff. A durable green would certainly make the fortune of any chemiſt who ſhould diſcover it.

The warp being fixed in the loom, or, in the language of the country, gaited, is divided to give paſſage to the weft in the ſhuttle, either by two, three, or more, treddles; or, if the pattern, or courſe of changes in the order of raiſing and depreſſing the threads of the warp, be various, ſo that the weaver could not manage the requiſite number of treddles, by a great number of ſtrings which paſs over pullies above the loom, and are drawn one after another, by a little boy, above whoſe head they are orderly diſpoſed in two rows, by the ſide of the looms. Theſe looms are therefore called drawboys. Theſe boys, however, will ſhortly be ſet aſide for machinery, which is rapidly introducing as a ſubſtitute. For the formation of ſprigs, &c. of various colours, there are often as many ſhuttles as colours; or a number of little ſwivel looms, ſuch as they uſe for the weaving of tapes, are introduced occaſionally, as many as there are ſprigs in the breadth of the piece. Quiltings appear to be two diſtinct cloths; tied, as it were, together, by ſtitches which go through both cloths; and in ſome caſes, as in bed-quilt, there is a third ſhuttle, which throws in a quantity of coarſely ſpun cotton, to ſerve as a kind of wadding. The counterpanes are woven with two ſhuttles, one containing a much coarſer weft than the other; the coarſer weft is thrown over at certain intervals, and the thread is picked up with an iron pin, rather hooked at the point, ſo as to form knobs diſpoſed in a ſort of pattern.

When the goods are come from the loom, moſt of the ſorts of them,

them, previouſly to their being bleached, are dreſſed or fired, by being drawn, and that not very quickly, over very red-hot cylinders of iron, by which the ſuperfluous nap is burnt off. To ſee ſuch an operation performed upon ſo combuſtible a ſubſtance, naturally fills a ſtranger with the utmoſt aſtoniſhment. They are then waſhed in a wheel with ſoap and water, and, having been well ſcoured with an alkaline lixivium, are dipped in the oxygenated muriatic acid diluted to its proper ſtrength. Theſe operations are repeated alternately, till the goods have attained the requiſite degree of whiteneſs; and between each dipping, they are laid out upon the ground, expoſed to the action of the ſun and air. When completely bleached, they are either ſmoothed upon long tables, with ſmoothing irons, or calendered, that is, ſtretched and preſſed between a courſe of rollers, by which they acquire a fine gloſs. Callicoes are printed exactly in the ſame way as the kerſymeres in Yorkſhire; but the works are uſually upon a much larger ſcale. Thickſets, corduroys, velveteens, &c. are cut upon long tables, with a knife, of a conſtruction ſomewhat like the ſting of a waſp, terminating in a very ſharp point, defended on each ſide by a ſort of ſheath. This point is introduced under the upper courſe of threads, which are intended to be cut, and with great eaſe carried forward the whole length of the table.

The rapid increaſe of the cotton trade appears to have been owing, in a great meaſure, to the more liberal introduction of machinery into every branch of it, than into any other of our ſtaple manufactures. The utility and policy of employing machines, to ſhorten labour, has been a ſubject which has exerciſed the pens of ſeveral ingenious writers; while their introduction into almoſt every branch of manufacture has been attended, in the outſet, with much riot and diſorder. They are, undoubtedly, moſt wonderful productions of human genius, the progreſſive exertions of which, neither can nor ought to be ſtopped: they enable the manufacturer to produce a better article than can be made by the hand, in conſequence of the uniformity and certainty of their operations; and at a much lower price, in conſequence of the vaſt quantities of work they are capable of performing. They thus ſupport the credit of our manufactures abroad; and enable us, under the vaſt load of taxes, and conſequent increaſe in the price of every neceſſary of life, to meet our foreign competitors with advantage at market. They can even allow the goods to furniſh, in their paſſage, a conſiderable revenue to the government. And although they do, undoubtedly, on their firſt introduction, throw ſome perſons out of employ, by changing the nature and courſe of buſineſs, they almoſt immediately make up for the inconvenience by aſtoniſhingly multiplying the abſolute quantity of employment. If they take away their work from carders and ſpinners, they return it them back tenfold as winders, warpers, weavers, dreſſers, dyers, bleachers, printers, &c. &c.

On the other hand, may it not be a ſubject of reaſonable apprehenſion, whether our manufactures may not be much more eaſily and ſpeedily removed into foreign countries, by the tranſplantation of our machines, than of our workmen? They have no prejudices to conquer, no relations or friends to leave, no old habits to break, no new language to learn, no rooted attachment to their native ſoil. They are at once naturalized in any country, and will enable the inhabitants of any country, that can procure them, immediately to ri-

val thoſe in which they were originally produced. But this is a conſideration for the inhabitant of a particular country: the moraliſt, and the friend of mankind, will be more affected by ſuch conſiderations as the following:

It is greatly to be feared, that whoever, unbiaſſed by intereſt or prejudice, and under the influence of no motives but a regard to the welfare of his fellow-creatures, examines theſe eſtabliſhments, will be ſtrongly inclined to doubt whether they are, upon the whole, of real advantage to the bulk of the perſons employed in them, and, of courſe, to ſociety at large. It has been commonly, and I fear too juſtly, remarked, that wherever the labouring part of mankind have been collected in large bodies, they have always, more or leſs, corrupted each other; and, I am ſure, it will not require any very acute talent for obſervation, to diſcover a ſenſible change in the manners of the people in the neighbourhood of theſe great factories. But, it is not this circumſtance merely, connected with theſe eſtabliſhments, of which the friends to the improvement of their ſpecies have juſt cauſe to complain. An ingenious diviſion has ſometimes been made of the day, into three parts, one for labour, one for meals and recreation, and one for reſt; and alſo of the life, into one for learning, one for working, and one for enjoyment and repoſe. Nothing like either of theſe propoſitions is at all attended to here. I know, it has uſually been boaſted of, as a great advantage to theſe machines, that they encourage population, by rendering children valuable to their parents at an early period of their lives. I confeſs, that I am of a different opinion. Childhood and youth are the proper ſeaſon for encouraging both the body and the mind to unfold themſelves; the one by air and active exerciſe; the other, by allowing it leiſure for obſervation, and by aſſiſting it with ſuch inſtruction as is ſuited to the particular capacity and ſtation in life. But when children are ſet to work almoſt as ſoon as they can walk; when, from ſix years of age, they are confined in cloſe rooms ten hours in the day, to give notice of the breaking of a thread; what muſt become of thoſe bodily powers, which, at this important period of life, ought to be kept in full play? how ſhould thoſe intelligent faculties expand which are confined to ſuch minute objects? or what moral ſtructure can be expected ſhould be built on ſuch foundations; where nothing is heard in converſation between thoſe of the ſame ſex, but profaneneſs, and between thoſe of a different, but obſcenity? So that the real ſtate of the caſe appears rather to be this; that parents are tempted to defraud their children of the exerciſe neceſſary to their health, of the education neceſſary to their uſefulneſs, and of their morals by evil company, in order to ſecure for themſelves, as the price of theſe ſacrifices, ſome paltry fourpence or ſixpence a day; which is, beſides, very frequently perverted into the means of their own increaſed intemperance. If this be true, population is diſcouraged by theſe machines, both among the old and the young.

But this is not all: where parents are employed along with their children, it is poſſible, may we not ſay probable, that natural affection, and a regard to their own intereſt, will induce them ſtill to pay ſome attention to the behaviour of their children; and that the hope of their improvement, or the dread of being chargeable with having contributed to corrupt them, will alſo have ſome effect as a check upon their own conduct.

But

But what ſhall we ſay of thoſe eſtabliſhments which hire, by wholeſale, for a term of years, the pauper-children of a diſtant pariſh, and thus break all the ties of parental and filial affections, and deſtroy all the motives to a virtuous conduct, which they may be expected to ſuggeſt? When the owners of a great factory take three hundred children from the overſeers of St. Giles's, and bring them down in covered waggons, never to ſee, or hear of, or care for, their parents more; what can we call ſuch vehicles, but ſlave-veſſels upon wheels; or what ſuch factories, but what I heard one of them emphatically called, a receptacle for *white negroes?*

In many caſes, indeed, the children are well lodged and fed, and, in ſome caſes, taught; but then, the ſchool-hours are robbed from the hours of recreation, and not from thoſe of labour; and, when children have been worked from ſix to ſix, with the only neceſſary intermiſſion of meals, few perſons, I ſuppoſe, will queſtion, whether the interval between work and bed-time would be better employed in the ſchool or in the play-field.

Further, the object of their engagement is to attend to the buſineſs of the factory; that is, to ſuperintend the regular progreſs of a ſeries of operations, produced by machinery, ſuch as the tying of broken threads, the ſerving of cardings, rovings, and twiſt, to the different parts of the machine. Not one of theſe things fit them for afterwards ſupporting themſelves; ſo that when the time of their emancipation is arrived, and they are turned adrift, to have their places ſupplied by another ſucceſſion of children, who can be paid and fed at a ſmaller charge, the only reſource for the men, is the army; for the women, the wretched and pitiable trade of proſtitution.

There is ſtill another evil conſequence of theſe eſtabliſhments, which, though perhaps of leſs importance, has made more noiſe, becauſe people are too commonly moſt affected by what may affect themſelves. It has been found, that the work is better performed the leſs air is admitted into the factory; the circulation of freſh air is, therefore, too much diſcouraged, and of courſe the ſeeds of contagion are accumulated. In ſome inſtances, too, the works have been kept going day and night; and the two ſets have ſucceeded each other in the unventilated rooms of the one, and the yet warm beds of the other, till ſomething very like plague has been repeatedly generated. Thoſe who wiſh to ſee this matter ſet in its true light, may conſult Sir William Clerke's Thoughts on Contagion, the Reports of the Mancheſter Phyſicians, and Regulations and Orders of the Magiſtrates at the Mancheſter Quarter-ſeſſions.

I truſt I ſhall not be ſuſpected of any thing ſo abſurd, as the wiſh to check the progreſs of mechanical improvements, or to ſay to the inventive powers of the mind, "hitherto ſhall ye go, but no farther." Whenever any ſtate has acted on ſo wild a principle, the only effect has been to drive reſtrained genius to take refuge in another, which has received the benefit with open arms, and laughed at the folly of its rival. Nor do I, by any means, wiſh to be underſtood, as applying the above obſervations to every eſtabliſhment of this nature. If all their owners paid ſuch attention to the comfort, health, and improvement, of thoſe whom they employ, as the benevolent Mr. Dale, of Lanerk, there would be leſs occaſion for either public or private animadverſion; but as this, it is to be feared, is not ſoon likely to be the caſe, it appears to me, that theſe large factories are

very

very fair objects of legiſlative regulation. For every ſtate is bound to take care, that even genius itſelf ſhall not ſo uſe its own, as to injure that of another; and that it is in an eſpecial manner bound to protect the poor from being abuſed or corrupted by the rich leaders either of the landed or commercial ariſtocracy: to the introduction of which latter claſs, I look upon theſe eſtabliſhments to have been eminently inſtrumental.

ACCOUNT OF CALVIN PHILIPS, THE AMERICAN DWARF.

A REMARKABLE dwarf has lately been exhibited at New York. At the age of eight his height was twenty-ſix inches and a half, and his weight twelve pounds, including his clothes.

This phenomenon was born at Bridgewater, in the ſtate of Maſſachuſetts, on the 14th of January 1701. His father, who is about the middle ſize, was twenty-four years of age when the child was born; and his mother, rather above the ordinary ſize, was twenty-ſix, both ſound and healthy. They have had five other children, two before and three ſince the birth of the dwarf, all of them healthy, and of the uſual ſize. All the circumſtances of geſtation and parturition in the caſe of this dwarf were natural: he was ſo ſmall at his birth as ſcarcely to weigh two pounds; his thigh was not thicker than a man's thumb, and all the other parts of his body were in proportion. His mother, who is a poor woman, uſed to carry him in her boſom while ſhe was ſpinning.

Notwithſtanding his diminutiveneſs, this child was extremely healthy, had a good appetite, was exempt from all the diſeaſes of infancy, except the whooping cough, which was very favourable, and ſome trouble from worms: he was weaned at ſeven months, began to creep at nine months, and to walk at eighteen months, but he did not begin to ſpeak till he was four years of age. He got his firſt teeth at ten or eleven months without pain or difficulty, and has ſince had the common number, two of which are already ſhed.

From his birth, till two years old, he grew very ſlowly, afterwards more perceptibly till five, and ſince that period has altogether ceaſed to grow, which is aſcertained both by his weight, and by the ſize of his clothes worn three years ago.

Since he was weaned he has always been fed upon the common articles of diet given to children; he eats moderately but ſufficiently, and is particularly fond of fruits and cyder, but has never drunk any diſtilled liquor. He ſleeps in an eaſy and natural manner, generally goes to bed about ſeven o'clock, and repoſes till four or five in the morning, but never ſleeps in the day-time. He is active, playful, ſprightly, and very iraſcible, and is commonly occupied in the ſports of children, to which he is devoted in a remarkable degree.

On inſpection of his body undreſſed, no deformity or deficiency appears; on the contrary, he is every way formed with the greateſt ſymmetry. His figure diſplays a pleaſing and elegant proportion, and his face, though thin and long, is made of regular and agreeable features, correſponding to his age rather than ſize, and indicating a degree of maturity, in point of evolution, much beyond his years. His complexion and hair are light, his eyes blue, and his general aſpect is delicate. The palms of his hands and ſoles of his feet have

acquired

acquired much of the hardneſs, and the former are a good deal marked with the lines belonging to maturer age. His voice is ſhrill, and leſs articulate than is common at his period of life. He is rather reſerved to ſtrangers, much diſpleaſed with the inſpection of viſitors, and already appears to ſhew ſome ſigns of ſexual propenſity.

His mental attainments appear to fall rather ſhort of the ordinary ſtandard at his age: he has only learned a few letters of the alphabet; but his ſituation, in a variety of reſpects, has been unfavourable to improvement; and it is to be wiſhed that proper attention may be paid to the cultivation of his underſtanding, in order to aſcertain the comparative powers of his mind.

In his travels, as a public ſpectacle, this dwarf is under the charge of his maternal grandfather and grandmother. The former is a large and robuſt man aged fifty-ſix, and the latter is about the middle ſize and aged fifty-four. They are both in good health, and have been ſo generally throughout their lives. They ſay that the boy never ſuffered any injury by blows, falls, or other accidents, whether before or after his birth, and that they are unacquainted with any cauſe to which his diminutive ſize may be aſcribed.

DISEASES OF MINERS, AND PERILS OF MINING.

THE employments of miners are unwholeſome, and very ſeldom allow them to reach their grand climacteric. Their appearance, indeed, denotes an imperfect ſtate of health, it being commonly pale, wan, and weakly; not that they are ſubject to any particular complaint (except one); but being perpetually in the wet, and experiencing quick and conſtant tranſitions from heat to cold, they gradually undermine their conſtitutions, and fall early victims to the diſeaſes generally produced by this inattention.

The diſorder which forms the exception juſt-mentioned, is called by the patients *ballan*, and ſeems peculiar to the lead mines. It is a conſtipation of the bowels (produced by their imbibing into the ſtomach particles of lead) of uncertain duration, but attended with acute and intolerable pain. The poor wretch, groaning under this affliction, has frequently been known to continue fourteen days without an evacuation, and when, at length, releaſed, to have diſcharged with his urine and fæces ſmall maſſes of the pernicious mineral. Perhaps, however, the unhealthy appearance of the miners may in ſome degree be occaſioned by their free uſe of ſpirituous liquors, to which they are fatally attached. Smoking, alſo, is a moſt favourite practice with them; and, carried to the extreme in which they indulge it, may aſſiſt in weakening and debilitating them. The paſſion, indeed, extends in all its force to the children of theſe people; and boys of ten or twelve years old are perpetually ſeen with ſhort pipes, about two inches long, ſtuck in their mouths, and breathing, like Chimæras, ſmoke and flame from morning to night. The number of workmen, including colliers, employed in the different mines around Holywell, are about ſeven hundred.

Perilous as the buſineſs of mining appears to be, one naturally expects to hear of frequent accidents among the workmen. Habit, however, renders them ſo expert, that *ſerious* caſualties ſeldom occur. Some "hair-breadth 'ſcapes," indeed, are on record, which, had they not been told us by thoſe whoſe veracity is unqueſtionable,

we ſhould not have very haſtily given credit to. Of theſe the following are the moſt remarkable:

A few years ſince, a workman fell down the ſhafts of a mine in the neighbourhood of Holywell, nearly one hundred and twenty feet deep, and was ſo little incommoded by the ſudden deſcent, as to exclaim to his companions above, who were anticipating his immediate death, "Ecod, I've broke my clogs."

A coachman of Mr. Pennant, alſo, fell down a coal-pit, with ſimilar good fortune.

Theſe, however, were nothing, when compared to the adventure of a man now living at Whiteford, near Holywell, who, when a lad, had tumbled into one of theſe mines, of three hundred feet, and eſcaped alive.

Not more than two or three years ſince, the roof of a neighbouring mine gave way ſo ſuddenly, that a poor workman, not having time to eſcape, was inſtantly overwhelmed with the foundering earth. Standing fortunately at this time under a maſs of rock, he eſcaped being immediately cruſhed to death; but, as there were many thouſand tons of earth above him, the melancholy proſpect of certain deſtruction, by means the moſt lingering and terrible, ſtill preſented itſelf to him. When the accident happened, he had half a pound of candles in his hand, and upon this, and the trickling water that diſtilled through the cracks of the rock, he ſubſiſted nine days, until his faithful companions, who, with an anxious ſolicitude that does honour to humanity, worked inceſſantly (ſpell and ſpell) for nine days and as many nights, at length reached and liberated him from the horrible priſon in which he was immured.

A ſingular inſtance of providential preſervation occurred alſo in a coal-mine at Moſtyn-park, a few miles from the ſcene of the laſt wonder. As twelve men were following their employment in the dark receſſes of the mountain, the water ſuddenly burſt in, and in a few minutes muſt have overwhelmed them all. The rope, however, by which the bucket is drawn up, happened to be hanging down at this critical moment, and the whole party, clinging to it, hallooed luſtily to their companions above to pull them up. Their cries were heard, and the people immediately wound up the rope, which brought them ſafely to the top, though it had that very day been condemned as too old and unſafe to be longer uſed.

ACCOUNT OF A BANIAN-TREE IN THE PROVINCE OF BAHAR.—By COLONEL IRONSIDE.

NEAR Manjee, a ſmall town at the confluence of the Devah (or Gogra) and the Ganges, about twenty miles weſt of the city of Patna, there is a remarkably large tree, called a *bur* or *banian-tree*, which has the quality of extending its branches, in a horizontal direction, to a conſiderable diſtance from its ſtem; and of then dropping leafleſs fibres, or ſcions, to the ground, which there catch hold of the earth, take root, embody, grow thick, and ſerve either to ſupport the protracted branches, or, by a farther vegetation, to compoſe a ſecond trunk. From theſe branches other arms again ſpring out, fall down, enter the ground, grow up again, and conſtitute a third ſtem, and ſo on. From the oppoſite pretty high bank of

of the Ganges, and at the diſtance of near eight miles, we perceived this tree of a pyramidical ſhape, with an eaſy ſpreading ſlope from its ſummit to the extremity of its lower branches, and miſtook it at firſt for a ſmall hill: we had no quadrant to meaſure its height; but the middle or principal ſtem is conſiderably higher, I think, than the higheſt elm, or other tree, I ever ſaw in England. The following compriſe ſome other of its dimenſions, which were taken with a cord of a given length:—

	Yards.	Feet.
Diameter of the branches from north to ſouth	121, or	363
Diameter of ditto from eaſt to weſt - -	125, or	375
Circumference of the ſhadow of the extreme branches, taken at the meridian - -	372, or	1116
Circumference of the ſeveral bodies or ſtems, taken by carrying the cord round the outermoſt trunks	307, or	921

The ſeveral trunks may amount to fifty or ſixty.

N. B. The dropping fibres ſhoot down from the knots or joints of the boughs.

This tree, as well as the *peepel*, and many other large trees in India, is a creeper. It is often ſeen to ſpring round other trees, particularly round every ſpecies of the palm. The date, or palmyra, growing through the centre of a banian-tree, looks extremely grand; and yet none of the European landſcape painters, who have delineated views of this country, have introduced this characteriſtic object into their pieces. I have frequently obſerved it alſo ſhooting from old walls, and running along them. In the inſide of a large brick-wall it lined the whole circumference of the internal ſpace of it, and thus actually became a tree turned inſide out.

Under the tree ſat a *fakir*, or devotee. He had been there twenty-five years; but he did not continue under the tree throughout the year, his vow obliging him to lie, during the four coldeſt months, up to his neck in the Ganges; and to ſit, during the four hotteſt months, cloſe to a large fire.

OF JUGGLERS; OR THE ARTS OF DECEPTION.

JUGGLERS will never want encouragement and ſupport, while they exhibit with confidence any thing uncommon, and know how to ſuit the nature of their amuſements to the taſte of the ſpectators. The greater part of mankind love deception ſo much, that they reward liberally thoſe who impoſe on their ſenſes, as is proved by the ready ſale of gilt articles, artificial gems, and a thouſand other things which are not in reality what they appear to be. We do not know whether Montagne is right in conſidering it as a ſign of the weakneſs of our judgment, that we take a pleaſure in beholding objects on account of their rarity, novelty, or the difficulty that attends them, though they may be ſubſervient to no uſeful purpoſe. This appears to proceed from that innate curioſity which ſerves as a ſpur to incite us to enlarge our knowledge, and to engage in reſearches and undertakings that often lead to diſcoveries of greater importance.

Jugglers, indeed, ſeldom exhibit any thing that can appear wonderful to thoſe acquainted with natural philoſophy and mathematics; but theſe even often find ſatisfaction in ſeeing truths already known to them applied in a new manner; and they readily embrace every

opportunity of having them farther illuſtrated by experiments. Many, however, are too precipitate, and attempt to explain before they have ſufficiently examined, of which the golden tooth at the end of the ſixteenth century, the conjuring-rod at the end of the ſeventeeth, and the cheſs-player and ſpeaking-machine at the end of the preſent, may ſerve as inſtances. But it often happens, that what ignorant perſons firſt employ, merely as a ſhow, for amuſement or deception, is afterwards ennobled by being applied to a more important purpoſe. The machine with which a Savoyard, by means of ſhadows, amuſed children and the populace, was by Liberkühn converted into a ſolar microſcope; and, to give one example more, which may convince female readers, the art of making ice in ſummer, or in a heated oven, enables gueſts, much to the credit of their hoſteſs, to cool the moſt expenſive diſhes. The Indian diſcovers precious ſtones; and the European, by poliſhing, gives them a luſtre.

But, if the arts of juggers ſerved no other end than to amuſe the moſt ignorant of our citizens, it is proper that they ſhould be encouraged for the ſake of thoſe who cannot enjoy the more expenſive deceptions of an opera. They anſwer other purpoſes, however, than that of merely amuſing: they convey inſtruction in the moſt acceptable manner, and ſerve as an agreeable antidote to ſuperſtition, and to that popular belief in miracles, exorciſm, conjuration, ſorcery, and witchcraft, from which our anceſtors ſuffered ſo ſeverely. Wherever the vulgar were aſtoniſhed at the effects of ſhadows, electricity, mirrors, and the magnet, intereſted perſons endeavoured by theſe to frighten them; and thus miſapplied the powers of nature to promote their own advantage. The pontiffs and their clergy ought, undoubtedly, to be deteſted for diſcouraging experimental philoſophy. That ſcience they conſidered as a formidable enemy; and they thought they gained no ſmall advantage when they induced the houſe of Medici, by granting it the cardinalſhip, to ſuppreſs the Academy del Cimento. When Gaſner exhibited his deceptions, ſome one propoſed to him to try his art at Berlin or Gottingen, and to drive out there if it were only the ſmalleſt of all the devils; but in theſe cities were not theatres where he was likely to ſucceed, and he never ventured to appear in them. The juggler, mentioned in Xenophon, requeſted the gods to allow him to remain only in places where there was much money, and abundance of ſimpletons. It is, however, better that the populace, if they will abſolutely pay for being deceived, ſhould be expoſed to a momentary deception from jugglers than to a continual deception from prieſts. As the former are not covered with the ſacred cloak of religion, their deceptions are more eaſily ſeen through and detected; and they conſequently ſoon ceaſe to be hurtful. So late as the year 1601, a horſe, which had been taught to perform a number of tricks, was tried, as poſſeſſed by the devil, and condemned to be burnt. This horſe was ſeen in the above-mentioned year by Caſaubon, to whom the owner, an Engliſhman, diſcovered the whole art by which he had been trained. At preſent ſuch horſes are ſo often exhibited publicly in the heretical countries of Europe, that the Spaniſh inquiſition, perhaps, will ſoon be aſhamed of conſidering ſuch a proof of the docility of theſe animals, and of the patient dexterity of their teachers, as the work of the devil, as they did in the beginning of this century.

Had

Had that book which Celſus wrote againſt the Magi been preſerved, we ſhould have been much better acquainted with the art of the ancient conjurors or jugglers. This Celſus, without doubt, is the ſame author whoſe virulent attack againſt the Chriſtians was refuted by Origen; and we have, therefore, greater cauſe to regret that a work on the above ſubject, by ſo learned and acute a philoſopher, ſhould have been loſt. He is mentioned with reſpect by Lucian, and even by Origen; and the former derived from him the account which he gives of Alexander the impoſtor. More ancient authors alſo wrote upon the ſame ſubject. Some of them are mentioned by Diogenes Laertius in his preface; and Suidas quotes the Magicon of Antiſthenes, though neither of theſe ſpeaks of Celſus; but of all thoſe writings none are now extant.

The deception of breathing out flames, which excites, in a particular manner, the aſtoniſhment of the ignorant, is very ancient. When the ſlaves in Sicily, about a century and a half before our æra, made a formidable inſurrection, and avenged themſelves in a cruel manner for the ſeverities which they had ſuffered, there was amongſt them a Syrian named Eunus, a man of great craft and courage, who, having paſſed through many ſcenes of life, had become acquainted with a variety of arts. He pretended to have immediate communication with the gods; was the oracle and leader of his fellow-ſlaves; and, as is uſual on ſuch occaſions, confirmed his divine miſſion by miracles. When, heated by enthuſiaſm, he was deſirous of inſpiring his followers with courage, he breathed flames or ſparks among them from his mouth while he was addreſſing them. We are told by hiſtorians, that for this purpoſe he pierced a nut-ſhell at both ends, and, having filled it with ſome burning ſubſtance, put it into his mouth and breathed through it. This deception, at preſent, is performed much better. The juggler rolls together ſome flax or hemp, ſo as to form a ball about the ſize of a walnut; ſets it on fire; and ſuffers it to burn till it is nearly conſumed; he then rolls round it, while burning, ſome more flax; and by theſe means the fire may be retained in it for a long time. When he wiſhes to exhibit, he ſlips the ball unperceived into his mouth and breathes through it: which again revives the fire, ſo that a number of weak ſparks proceed from it; and the performer ſuſtains no hurt, provided he inſpire the air not through the mouth but the noſtrils. By this art the Rabbi Bar-Cocheba, in the reign of the Emperor Adrian, made the credulous Jews believe that he was the hoped-for Meſſiah; and two centuries after, the Emperor Conſtantius was thrown into great terror, when Valentinian informed him that he had ſeen one of the body-guards breathing out fire and flames in the evening.

For deceptions with fire the ancients employed alſo naphtha, a liquid mineral oil, which kindles when it only approaches a flame. Galen informs us, that a perſon excited great aſtoniſhment by extinguiſhing a candle and again lighting it, without any other proceſs than holding it immediately againſt a wall or a ſtone. The whole ſecret of this conſiſted in having previouſly rubbed over the wall or ſtone with ſulphur. But as the author, a few lines before, ſpeaks of a mixture of ſulphur and naphtha, we have reaſon to think that he alludes to the ſame here. Plutarch relates how Alexander the Great was aſtoniſhed and delighted with the ſecret effects of naphtha, which

which were exhibited to him at Ecbatana. The fame author, as well as Pliny, Galen, and others, has already remarked, that the fubftance with which Medea deftroyed Creufa, the daughter of Creon, was nothing elfe than this fine oil. She fent to the unfortunate princefs a drefs befmeared with it, which burft into flames as foon as fhe approached the fire of the altar. The blood of Neffus, in which the drefs of Hercules, which took fire likewife, had been dipped, was undoubtedly naphtha alfo; and this oil muft have been always employed when offerings caught fire in an imperceptible manner. In all periods of the world, prieffs have acted as jugglers to fimple and ignorant people.

In modern times, perfons who could walk over burning coals or red-hot iron, or who could hold them in their hands and their teeth, have often excited wonder. In the end of the laft century, an Englifhman, named Richardfon, who, as we are aflured, could chew burning coals; pour melted lead upon his tongue; fwallow melted glafs, &c. rendered himfelf very famous by thefe extraordinary feats. Laying afide the deception practifed on the fpectators, the whole of this fecret conffifts in rendering the fkin of the foles of the feet and hands fo callous and infenfible, that the nerves under them are fecured from all hurt, in the fame manner as by fhoes and gloves. Such callofity will be produced if the fkin is continually compreffed, finged, pricked, or injured in any other manner. Thus do the fingers of the induftrious fempftrefs become horny by being frequently pricked; and the cafe is the fame with the hands of fireworkers, and the feet of thofe who walk bare-footed over fcorching fand.

In the month of September, 1765, when I vifited the copper-works at Aweftad, one of the workmen, for a little drink-money, took fome of the melted copper in his hand, and after fhewing it to us, threw it againft a wall. He then fqueezed the fingers of his horny hand clofe to each other; put it a few minutes under his armpit, to make it fweat, as he faid; and, taking it again out, drew it over a ladle filled with melted copper, fome of which he fkimmed off, and moved his hand backwards and forwards, very quickly, by way of oftentation. While I was viewing this performance, I remarked a fmell like that of finged horn or leather, though his hand was not burnt. The workmen at the Swedifh melting-houfes fhewed the fame thing to fome travellers in the laft century; for Regnard faw it in 1681, at the copper-works in Lapland. It is highly probable that people who hold in their hands red-hot iron, or who walk upon it, as I faw done at Amfterdam, but at a diftance, make their fkin callous before, in the like manner. This may be accomplifhed by frequent moiftening it with fpirit of vitriol; according to fome, the juice of certain plants will produce the fame effect; and we are aflured by others that the fkin muft be very frequently rubbed, for a long time, with oil, by which means, indeed, leather alfo will become horny.

Of this art traces may be found alfo in the works of the ancients. A feftival was held annually on Mount Soracte, in Etruria, at which the Hirpi, who lived not far from Rome, jumped through burning coals; and on this account they were indulged with peculiar privileges by the Roman fenate. Women alfo, we are told, were accuftomed to walk over burning coals at Caffabala, in Cappadocia,

near

near the temple dedicated to Diana. Servius remarks, from a work of Varro now loſt, that the Hirpi truſted not ſo much to their own ſanctity as to the care which they had taken to prepare their feet for that operation.

I am not acquainted with every thing that concerns the trial by ordeal, when perſons accuſed were obliged to prove their innocence by holding in their hands red-hot iron; but I am almoſt convinced that this alſo was a juggling trick of the popes, which they employed as might beſt ſuit their views. It is well-known that this mode of exculpation was allowed only to weak perſons, who were unfit to wield arms, and particularly to monks and eccleſiaſtics, to whom, for the ſake of their ſecurity, that by ſingle combat was forbidden. The trial itſelf took place in the church entirely under the inſpection of the clergy; maſs was celebrated at the ſame time; the defendant and the iron were conſecrated by being ſprinkled with holy water; the clergy made the iron hot themſelves; and they uſed all theſe preparatives, as jugglers do many motions, only to divert the attention of the ſpectators. It was neceſſary that the accuſed perſons ſhould remain at leaſt three days and three nights under their immediate care, and continue as long after. They covered their hands both before and after the proof; ſealed and unſealed the covering: the former, as they pretended, to prevent the hands from being prepared any how by art; the latter to ſee if they were burnt. Some artificial preparation was therefore known, elſe no precautions would have been neceſſary. It is highly probable that, during the three firſt days, the preventative was applied to thoſe perſons whom they wiſhed to appear innocent; and that the three days after the trial were requiſite to let the hands reſume their natural ſtate. The ſacred ſealing ſecured them from the examination of preſumptuous unbelievers: for, to determine whether the hands were burnt, the three laſt days were certainly not wanted. When the ordeal was aboliſhed, and this art rendered uſeleſs, the clergy no longer kept it a ſecret. In the thirteenth century an account of it was publiſhed by Albertus Magnus, a Dominican monk. If his receipt be genuine, it ſeems to have conſiſted rather in covering the hands with a kind of paſte than in hardening them. The ſap of the *althæa* (marſh-mallow), the ſlimy ſeeds of the flea-bane, which are ſtill uſed for ſtiffening by the hat-makers and ſilk-weavers, together with the white of an egg, were employed to make the paſte adhere; and by theſe means the hands were as ſafe as if they had been ſecured by gloves. The uſe of this juggling trick is very old, and may be traced back to a pagan origin. In the Antigone of Sophocles, the guards placed over the body of Polynices, which had been buried contrary to the orders of Creon, offered, in order to prove their innocence, to ſubmit to any trial: "We will," ſaid they, "take up red-hot iron in our hands, or walk through fire."

The exhibition of balls and cups, which is often mentioned in the works of the ancients, as the moſt common art of jugglers, is of great antiquity. It conſiſts in conveying ſpeedily, and with great dexterity, while the performer endeavours by various motions and cant phraſes to divert the attention of the ſimple ſpectators from obſerving his movements too narrowly, ſeveral light balls, according to the pleaſure of any perſon in company, under one or more cups; removing them ſometimes from the whole; and conveying them again

again back in an imperceptible manner. In general, three leaden cups are uſed, and as many balls of cork; and to prevent all diſcovery by their ſlipping from the thumbs of the juggler, or making a noiſe, as he muſt lay hold of them with much quickneſs, the table before which he ſits is covered with a cloth.

Theſe ſmall balls were by the ancients called *calculi*; and the cups *acetabula*, or *paropſides*. Caſaubon has already quoted moſt of thoſe paſſages in ancient authors which relate to this ſubject; and they have been repeated by Bulenger; but neither of theſe writers makes mention of the fulleſt and cleareſt deſcription given in the letters of Alciphron. We have there an account of a countryman who came to town, and was conducted by a merchant to the theatre, where he ſaw, with great aſtoniſhment, the exhibition of cups and balls: "Such an animal," ſays he, "as the performer, I would not wiſh to have near me in the country; for, in his hands, my property would ſoon diſappear." The art of oratory, becauſe it deceives the auditors, is frequently compared to that of balls and cups. From the Latin word *gabata*, mentioned by Martial, together with *paropſides*, the French have made *gobelets*; and hence their common expreſſions *jouer des gobelets*, and *joueur des gobelets*, which they uſe when ſpeaking of jugglers.

In all ages of the world there have been men who excited great wonder by extraordinary ſtrength. Inſtances of this have been already collected; but they do not belong to this ſubject. Above fifteen hundred years ago, there were people who, by applying a knowledge of the mechanical powers to their bodies, performed feats which aſtoniſhed every ignorant ſpectator; though it is certain that any ſound man of common ſtrength could perform the ſame by employing the like means. About the beginning of the preſent century, ſuch a ſtrong man, or Sampſon, as he called himſelf, a native of Germany, travelled over almoſt all Europe; and his pretended art has been mentioned by ſo many writers, that we may conclude it had not been often exhibited before; and that it was then conſidered as new. His name was John Charles von Eckeberg; he was born at Harzgerode in Anhalt; and, at that time, was thirty-three years of age. When he fixed himſelf between a couple of poſts, on any level place, two or more horſes were not able to draw him from his poſition; he could break ropes aſunder, and lift a man up on his knee while he lay extended on the ground. But what excited the greateſt aſtoniſhment was, that he ſuffered large ſtones to be broken on his breaſt with a hammer, or a ſmith to forge iron or an anvil placed above it.

This laſt feat was exhibited even in the third century, by Firmus or Firmius, who, in the time of Aurelian, endeavoured to make himſelf emperor in Egypt. He was a native of Seleucia in Syria; eſpouſed the cauſe of Zenobia, the celebrated Queen of Palmyra; and was at length executed publicly by order of the Emperor Aurelian. It is of this Firmus, and not of another, who a century after was overcome in Africa by the father of the Emperor Theodoſius, that Vopiſcus ſpeaks where he relates that he could ſuffer iron to be forged on an anvil placed on his breaſt. For this purpoſe he lay on his back; but he put himſelf in ſuch a poſition, by reſting with his feet and ſhoulders againſt ſome ſupport, that his whole body formed an arch; ſo that he ſeemed rather to be ſuſpended than to

lie at full length. This art, which is explained and illuſtrated by Defaguliers, and Profeſſor Kuhn of Dantzic, has now become ſo common that it is often exhibited without occaſioning much ſurpriſe.

In the works of the ancients, rope-dancers are frequently mentioned. The paſſages where they occur have been collected by various authors, though never completely; and I am inclined to think that thoſe who have ſeen many performers of this kind would be able to clear up ſome that are obſcure.

We meet with various appellations given to rope-dancers, which do not, as ſome have imagined, point out different kinds, but allude only to new-invented arts, leaps, or dexterities, which, while recommended by novelty, were much wondered at, though they were afterwards imitated by all. To theſe belong the *ſchænobatæ*, *oribatæ*, *neurobatæ*, *petaminarii*, *funambuli*, &c. Some of the ancient rope-dancers ſeemed to have uſed a balancing pole, or, at leaſt, to have had weights in their hands to preſerve an equipoiſe. It is certain, alſo, that rope-dancers were not wanting in the middle ages.

To place men upon the ſhoulders of each other in ſuch a manner that every row conſiſts of a man fewer, till they form a pyramid ending in a ſingle perſon, upon whoſe head a boy often ſtands with his feet upwards, is likewiſe an ancient piece of dexterity.

Hoops and wheels were employed by the *petauriſtæ*, who excited great aſtoniſhment among the populace. The firſt part of the art may have conſiſted in nothing more than the varied contortions and tumbling which we ſtill ſee practiſed by children trained for that purpoſe. Cilano explains a well-known paſſage of Manilius, as if the performers had darted through ſuſpended iron hoops, made often red hot.

The art of exhibiting various feats of horſemanſhip, which is practiſed ſo much in modern times, ſeems to have come firſt from the Eaſt. At any rate, thoſe performers in that way who, in the thirteenth century, were at the Byzantine court, and who travelled all over Europe, came from Egypt. They could ſtand on the horſes when at a gallop; mount and diſmount while on full ſpeed at the chaſe; tumble on horſeback, and do many other things equally extraordinary. At the end of the ſixteenth century, an Italian, who had learned this art while a ſlave in Turkey, went about exhibiting his dexterity in various parts of Europe. Montagne ſaw him at Rome in 1581; and the year following he was at Paris. Some of theſe feats were performed by the ancient *deſultores*.

Whether the ancients taught horſes, dogs, birds, and other animals, to perform various tricks which are frequently exhibited at preſent for money, we do not know; but it is certain that what they made the elephant, which, undoubtedly, is the moſt ſagacious and tractable of all animals, perform, exceeds every thing yet known of the kind. Without repeating what has been ſo often related, we ſhall only mention the elephant which walked upon a rope backwards and forwards, as well as up and down; and which Galba firſt cauſed to be ſhown to the Roman people. After this, ſo much confidence was placed in the dexterity of the animal, that a perſon ſat on an elephant's back while he walked acroſs the theatre upon a rope extended from the one ſide to the other. Lipſius, who has collected the teſtimonies, thinks they are ſo ſtrong that they cannot be doubted.

The training of horſes to obey a private ſignal, imperceptible to

the moſt attentive ſpectator, and to perform actions which appear, to thoſe unacquainted with the art, to diſplay rational faculties, are not mentioned in the works of the ancients. That the Sybarites, however, taught their horſes to dance to the ſound of muſic, is aſſerted by a variety of authors. In the ſixteenth century, dogs trained in the like manner excited great wonder.

In the year 1766, Mr. Wildman of London, made himſelf much known by taming or training bees, in ſuch a manner that they not only followed him wherever he went, but ſettled even on his face and hands without ſtinging him, and ſeemed as if obedient to his orders. Some years after, a perſon who practiſed the like art, travelled through Germany, and gave himſelf out to be Wildman; but Mr. Riem proved that he was not Wildman, and publiſhed the ſecret by which he acquired ſo much power over theſe inſects. Whether the ancients were acquainted with this art is uncertain; but we ſhall here remark, that it was known in the kingdom of Galam, at Senegal, a hundred years before Wildman: for when Brue, a Frenchman, was there, in 1698, he was viſited by a man who called himſelf the king of the bees. "Let his ſecret," ſays that traveller, "conſiſt in what it may, this much is certain, that they followed him wherever he went, as ſheep do their ſhepherd. His whole body, and particularly his cap, was ſo covered with them, that they appeared like a ſwarm juſt ſettled. When he departed they went along with him; for, beſides thoſe on his body, he was ſurrounded by thouſands which always attended him.

In modern times, perſons deſtitute of arms and hands, or who have theſe limbs formed very imperfectly, but who poſſeſs the art of ſupplying that want by the uſe of their feet and toes, ſhew themſelves ſometimes for money; and, as they entertain the ſpectators by exciting their wonder, they deſerve from them that ſupport which they are not able to obtain in any other manner. Inſtances of ſuch people who had acquired this art, have been very common within the two laſt centuries; but, in the works of the ancients, we have found only one. An Indian king named Porus, ſent to the emperor Auguſtus an embaſſy with preſents, among which were ſome rare animals, and a man without arms, who with his feet could bend a bow; diſcharge arrows; and put a trumpet to his mouth and blow it. Dio Caſſius confeſſes that he did not know how this was poſſible; but Strabo refers for his authority to Nicolaus of Damaſcus, who ſaw all the preſents, as they paſſed through Antioch. Had this deformed perſon, whom Strabo compares to a Hermes, travelled about, according to the modern practice, as a ſhow, he would have been better known, and in all probability his example would have induced others to imitate his art.

Figures or puppets, which appear to move of themſelves, were employed formerly to work miracles; but they could hardly be uſed for that purpoſe at preſent in any catholic country of Europe, though they ſtill ſerve to amuſe the vulgar. Among theſe are the *marionettes*, as they are called, the different parts of which are put in motion imperceptibly by a thread. Of a ſtill more ingenious conſtruction are thoſe which are moved by the turning of a cylinder, as is the caſe in the machines with which ſome of the old miners in Germany earn a livelihood; but the moſt ingenious of all are thoſe which are kept in continual movement for a certain time, by the help of wheels

with a weight or ſpring. The latter are called *automata*; and, when they repreſent human figures, *androides*. Under the former general name are comprehended our watches, the moſt uſeful of all, and alſo jacks, with many others. The latter appellation is given to ſmall puppets, which, when their inner works have been wound up, run upon the table or pavement, and as they advance move their head, eyes, and hands. They have been exhibited ſometimes under the name of *ocellate Margareth*, which gave riſe perhaps to the word *marionette*.

The proper *marionettes* are very old. They were common among the Greeks, and from them they were brought to the Romans. They were known by the name of *neurospaſta*, and were much uſed at their ſhows. Ariſtotle ſpeaks of ſome which moved their head, eyes, hands, and limbs, in a very natural manner. They are mentioned with equal preciſion by Galen, Xenophon, Antoninus, Horace, Gellius, and others. To theſe belong the *phalli*, which were carried round during the feſtivals of Oſiris and Bacchus, and of which one member only, that properly meant by the name, and which was almoſt as large as the whole body, moved upon certain threads being pulled.

When clocks were brought to perfection, ſome artiſts added to them figures, which, at the time of ſtriking, performed various movements; and, as they ſucceeded in theſe, ſome attempted to make, detached from clocks, ſingle figures, which either moved certain limbs, or advanced forward and ran. In the middle of the ſixteenth century, when Hans Bullman, a padlock-maker at Nuremberg, conſtructed figures of men and women which moved backwards and forwards by clock-work, and beat a drum, and played on the lute according to muſical time, they excited univerſal aſtoniſhment as a new invention. It was about the ſame period that watches came into uſe. The accounts however which ſpeak of much older automata deſerve to be examined with more attention.

The moſt ancient of all are undoubtedly the tripods conſtructed by Vulcan, which being furniſhed with wheels advanced forwards to be uſed, and again returned to their places. But what was impoſſible to the gods of Homer? An unbeliever might conjecture that theſe tripods, which are mentioned alſo by Ariſtotle, and which perhaps were only a kind of ſmall tables, or dumb waiters, had wheels ſo contrived, that they could be put in motion and driven to a diſtance on the ſmalleſt impulſe.

That Dædalus made ſtatues, which could not only walk, but which it was neceſſary to tie in order that they might not move, is related by Plato, Ariſtotle, and others. The latter ſpeaks of a wooden Venus, and remarks, that the ſecret of its motion conſiſted in quickſilver having been poured into it. However this may be, it is aſtoniſhing that the Chineſe ſhould have fallen upon the invention of giving motion to puppets by means of quickſilver, and in ſo ingenious a manner that Muſchenbroek thought it worth his while to deſcribe their whole conſtruction, and to illuſtrate it by figures. But, before this method was known in Europe, Kircher had an idea of putting a ſmall waggon in motion by adding to it a pipe filled with quickſilver, and heating it with a candle placed below it. The account of Ariſtotle is more myſterious, for he does not inform us how the quickſilver acted.

Caliſtratus, another writer, who was the tutor of Demoſthenes, gives us to underſtand that the ſtatues of Dædalus were made to move by the mechanical powers. But what has been aſſerted by Paſæphatus, and by Gedoyn, Banier, Goguet, and others among the moderns, is moſt probable. The firſt ſtatues of the Greeks were imitations of thoſe of the Egyptians, for the moſt part clumſy figures, with their eyes ſhut, their arms hanging down cloſe to the body on each ſide, and their feet joined together. Thoſe made by Dædalus had their eyes open, as well as their feet and hands free; and the artiſt gave them ſuch a poſture, that they ſeemed either reclining, or appeared as if ready to walk or to run. As Anacreon, ſtruck with wonder, exclaimed when he ſaw a waxen image of his beloved object, "Be gone, wax, thou wilt ſoon ſpeak!" the aſtoniſhed Greeks, in like manner, cried out, when they beheld the ſtatues of Dædalus, "They will ſoon walk." The next generation affirmed that they really walked; and their poſterity, adding ſtill to what was told them, affirmed that they would have run had they not been bound.

Equally imperfect is the account given of the wooden pigeon conſtructed by Archytas of Tarentum. We are informed that it flew; but, when it had once ſettled, it could not again take flight. The latter is not incredible; but, even if we allow that aëroſtatic machines were then known, it is impoſſible to believe the former. At preſent one cannot determine with any probability, what piece of mechaniſm gave riſe to this relation. The head of Alberius Magnus, which is ſaid not only to have moved but to have ſpoken, is too little known for any opinion to be formed concerning it. The conſtruction of it muſt have been very ingenious and complex, if it be true that he was employed upon it thirty years.

We ſhall here ſay a few words reſpecting an object of juggling, which, however old it may be, ſtill excites aſtoniſhment, and has often impoſed upon the credulity of men of learning. We mean thoſe ſpeaking machines, which, according to appearance, anſwer various queſtions propoſed to them, ſometimes in different languages, ſing, and even blow a huntſman's horn. The figure, or only a head, is often placed upon a box, the fore part of which, for the better deception, is filled with a pair of bellows, a ſounding-board, cylinder and pipes, ſuppoſed to repreſent the organs of ſpeech. At other times the machine is only like a peruke-maker's block, hung round with a Turkiſh dreſs, furniſhed with a pair of arms, and placed before a table; and ſometimes the puppet ſtands upon the table, or againſt a wall. The ſounds are heard through a ſpeaking-trumpet, which the figure holds in its mouth.

Many jugglers are ſo impudent as to aſſert, that the voice does not proceed from a man, but is produced by machinery, in the ſame manner as the muſic of an organ. Some are more modeſt or timorous, and give evaſive anſwers to the queſtions aſked them reſpecting the cauſe of the voice, with as much art as thoſe who exhibit with balls and cups. Concerning theſe ſpeaking machines, however, different opinions are entertained. Some affirm that the voice iſſues from the machine; others, that the juggler anſwers himſelf, by ſpeaking, as ventriloquiſts do, from the lower part of his belly, or by having the power to alter his voice; and ſome believe that the anſwers are given by a man ſomewhere concealed. The violence

violence with which these opinions are maintained exposes the juggler often to the danger of losing his life; for, when the illusion is detected, the populace, who in part suffer themselves willingly to be deceived, and who even pay the juggler for his deception, imagine that they have a right to avenge themselves for being imposed on. The machines are sometimes broken; and the owners of them are harshly treated as impostors. Yet we do not see why a juggler, with a speaking machine, is a more culpable impostor than he who pretends to breathe out flames and to swallow boiling oil, or to make puppets speak, as in the Chinese shadows. The spectators pay for the pleasure which they receive from a well-concealed deception, and with greater satisfaction the more difficult it is for them to discover it. But the person who speaks or sings through a puppet, is so well hid, that people of considerable penetration have imagined that such concealment was impossible. At present this art is well known. Either a child or a woman is concealed in the juggler's box; or some person, placed in a neighbouring apartment, speaks into the end of a pipe which proceeds through the wall to the puppet, and which conveys the answers to the spectators. The juggler gives every necessary assistance to the person by signs previously agreed on. The invention of causing statues to speak, by this method, seems so simple, that one can scarcely help conjecturing that it was employed in the earliest periods to support superstition; and many have imagined that the greater part of the oracles spoke in the same manner. This, however, is false, as has been proved by the Jesuit Baltus, and the author of an answer to Fontenelle's History of Oracles. It appears that the pagan priests, like our jugglers, were afraid that their deceptions, if long practised, might be discovered. They considered it, therefore, as more secure to deliver the answers themselves; or cause them to be delivered by women instructed for that purpose, or by writing, or by any other means. We read, nevertheless, that idols and the images of saints once spoke; for at present the latter will not venture to open their mouths. If their votaries ever really heard a voice proceed from the statue, it may have been produced in the before-mentioned manner.

Whether the head of Orpheus spoke in the island of Lesbos, or, what is more probable, the answers were conveyed to it by the priests, as was the case with the tripod at Delphi, cannot with certainty be determined. That the impostor Alexander, however, caused his Æsculapius to speak in this manner is related by Lucian. He took, says that author, instead of a pipe, the gullet of a crane, and transmitted the voice through it to the mouth of the statue. In the fourth century, when Bishop Theophilus broke to peices the statues at Alexandria, he found some which were hollow, and placed in such a manner against a wall that a priest could slip unperceived behind them, and speak to the ignorant populace through their mouths.

That people ventured more than a hundred years ago to exhibit speaking machines for money, has been proved by Reitz in his annotations to Lucian, where he produces the instance of one Thomas Irson, an Englishman, whom he himself knew, and whose art excited much wonder in King Charles II. and his whole court. When the astonishment, however, became general, one of the pages discovered, in the adjoining chamber, a priest who answered, in the same

ſame language, through a pipe, the queſtions propoſed to the wooden head, by whiſpering into its ear. This deception Irſon often related himſelf.

We ſhall now add only a few obſervations reſpecting the Chineſe ſhadows. This ingenious amuſement conſiſts in moving, by pegs faſtened to them, ſmall figures cut of paſteboard, the joints of which are all pliable, behind a piece of fine painted gauze placed before an opening in a curtain, in ſuch a manner as to exhibit various ſcenes, according to pleaſure; while the opening covered with gauze is illuminated, towards the apartment where the ſpectators ſit, by means of light reflected back from a mirror; ſo that the ſhadows of the pegs are concealed. When it is requiſite to cauſe a figure to perform a variety of movements, it is neceſſary to have ſeveral perſons, who muſt be exceedingly expert. When a ſnake is to be repreſented gliding, the figure, which conſiſts of delicate rings, muſt be directed, at leaſt, by three aſſiſtants.

This amuſement, which one can hardly ſee the firſt time without pleaſure, is really a Chineſe invention. We have ſeen Chineſe boxes on which ſuch moveable figures were apparent only when the box was held againſt the light. In China, theſe ſhadows are uſed at the well-known feaſt of lanterns; and a deſcription of them may be found in the works of ſeveral travellers. That they were common alſo in Egypt, we are informed by Proſper Alpinus, who admired them much; but he was not able to diſcover the method by which they were produced, as it was then kept a ſecret.

SINGULAR CURE OF A YOUNG WOMAN, EFFECTED BY EXPELLING FROM THE STOMACH, &c. THE LARVÆ OF CERTAIN INSECTS.

THE account of this ſingular caſe was tranſmitted to M. Odhelius, at Stockholm, together with ſome of the larvæ, by M. Flank, ſurgeon of Carliſtadt, who, during the courſe of forty years practice never ſaw any of the like kind diſcharged from the human body. The patient, who was ſeventeen years of age, and who for three years had been quite regular, became indiſpoſed in the year 1786, and complained of a violent pain and griping in her ſtomach, with a head-ache and confuſion in the morning, a burning in the throat, and great laſſitude. Theſe ſymptoms were leſſened after repeated eructation; but the diſorder ſtill increaſed. Mineral-water with jalep-powder was preſcribed, and the larvæ began gradually to be diſcharged; but, as the patient did not find much relief, and as ſhe nauſeated jalep-power, aloe-pills, with jalep reſin, and mercurius dulcis, were adminiſtered in its ſtead, and about a quart of mineral-water each time; by which means theſe troubleſome gueſts were gradually ſo completely expelled, that the patient, in the courſe of a few weeks, was perfectly cured. The larvæ were tranſmitted to the Cabinet of Curioſities belonging to the Academy of Sciences. Profeſſor Wilke found, on examining them, that they were of the ſpecies deſcribed by Reaumur under the name of *vers a queue de rat*, (rat-tailed worms,) and which belong to a kind of two-winged fly, called the pendulous fly, *muſca pendula* Linn. becauſe the larvæ are ſuſpended, as it were, by a long thread, which is their organ of reſpiration. Theſe larvæ, which the profeſſor examined,

were

were of a yellowiſh-brown colour, from four to ſix lines in length, with a tail of about the ſame extent; a cylindric body, from half a line to a line in thickneſs, cut acroſs ſomewhat obliquely before, and conical towards the tail. As the patient, before ſhe fell ill, had uſed a great deal of milk and cheeſe, M. Wilke was of opinion, that ſome of the eggs of theſe flies had been conveyed into her ſtomach in the rind of the cheeſe.

SIGNS EXHIBITED BY ANIMALS WHICH INDICATE CHANGES OF THE WEATHER.

THE fluids and ſolids of organiſed beings, and their animal machines, are conſtructed in ſuch a manner that a certain degree of motion puts them in a good ſtate, while an augmentation or diminution of it deranges and deſtroys that ſtate. The fluids, which by their nature are eaſily moved, as well as the fibres, which are highly ſuſceptible of irritation, are readily affected by changes of the ſurrounding atmoſphere, and ſuffer from their impreſſions, whether the air varies in its weight or qualities, or is changed in regard to its elaſticity. We find, among thoſe who are ſound and in perfect health, vivacity, good ſpirits, and great agility, when the air is pure and elaſtic; on the other hand, when the air becomes light and damp, and is deprived of its elaſticity, it throws the body into a ſtate of languor and debility. Valetudinarians, whoſe conſtitutions are delicate, or who are advanced in life, are much ſooner ſenſible of the impreſſions occaſioned by changes of the weather than thoſe who are ſtrong and robuſt. In general, the ſenſes of men who in their way of life deviate from the ſimplicity of nature, are coarſe, dull, and void of energy. Thoſe alſo who are diſtracted by a thouſand other objects, ſcarcely feel the impreſſions of the air; and, if they ſpeak of them to fill up a vacuum in their miſerable and frivolous converſation, they do it without thinking of their cauſes or effects, and without ever paying attention to them. But animals which retain their natural inſtinct, which have their organs better conſtituted and their ſenſes in a more perfect ſtate, and which beſides are not changed by vicious and depraved habits, perceive ſooner, and are more ſuſceptible of the impreſſions produced in them by variations of the atmoſphere, and ſooner exhibit ſigns of them.

Until the new diſcovery of animal electricity, little attention was paid to theſe ſigns, which were conſequently aſcribed to a certain natural preſcience. But, as the electric matter iſſuing from the earth diffuſes itſelf though the atmoſphere, it muſt penetrate and agitate the frail machines in queſtion; and, as it carries with it vapours and exhalations of various kinds, theſe muſt produce, on machines ſo delicate, different ſenſations, which make them move in a different manner; and, according as the received impreſſion is agreeable or troubleſome, they exhibit ſigns of joy or ſadneſs; ſend forth cries, or are ſilent; move, or remain at reſt; as is obſerved in all kinds of animals, without excepting man, when the weather is about to change.

In the laſt place, internal and animal electricity, which in all probability is the agent of life and the grand ſource of organic motion, muſt be as much ſubject to modifications as the external electricity, from which it acquires new force and activity by the vapours and humidity of the atmoſphere, which abſorbing the electric matter in abundance,

abundance, or ſerving it as a conductor, draws it off from the animal machine. Hence ariſes that langnor and debility which are experienced during wet weather, and when the ſouth winds prevail; and for the ſame reaſon the moiſture which has penetrated the organs, at leaſt thoſe that are weak or have ſuffered any hurt or injury, or been expoſed to ſome new agitation, produces uneaſineſs and occaſions pain. It is difficult to explain clearly and with preciſion how all this takes place; that is, how the electricity is excited, and by what mechaniſm exhalations and vapours affect animals, and produce changes in their bodies, ſince we are not acquainted with the curious organiſation of the moſt delicate parts of theſe machines; but we can obſerve and perceive the progreſs and general conſequences of theſe phenomena, as well as of thoſe by which they are produced. The following are the common and familiar ſigns exhibited by animals, which indicate changes of the weather, and which are not taken ſo much from the agricultural poet, who firſt collected them, as from common obſervation.

1. When the bats remain longer than uſual abroad from their holes, fly about in greater numbers and to a greater diſtance than common, it announces that the following day will be warm and ſerene; but, if they enter the houſes, and ſend forth loud and repeated cries, it indicates bad weather.

2. If the owl is heard to ſcream during bad weather, it announces that it will become fine.

3. The croaking of crows in the morning indicates fine weather.

4. When the raven croaks three or four times, extending his wings and ſhaking the leaves, it is a ſign of ſerene weather.

5. It is an indication of rain and ſtormy weather when ducks and geeſe fly backwards and forwards; when they plunge frequently into the water, or begin to ſend forth cries and to fly about.

6. If the bees do not remove to a great diſtance from their hives, it announces rain; if they return to their hives before the uſual time, it may be concluded that it will ſoon fall.

7. If pigeons return ſlowly to the pigeon-houſe, it indicates that the ſucceeding days will be rainy.

8. It is a ſign of rain or wind when the ſparrows chirp a great deal, and make a noiſe to each other to aſſemble.

9. When fowls and chickens roll in the ſand more than uſual, it announces rain: the caſe is the ſame when the cocks crow in the evening, or at uncommon hours.

10. Peacocks, which cry during the night, have a preſentiment of rain.

11. It is believed to be a ſign of bad weather when the ſwallows fly in ſuch a manner as to bruſh the ſurface of the water, and to touch it frequently with their wings and breaſt.

12. The weather is about to become cloudy, and to change for the worſe, when the flies ſting, and become more troubleſome than uſual.

13. When the gnats collect themſelves before the ſetting of the ſun, and form a ſort of vortex in the ſhape of a column, it announces fine weather.

14. When ſea-fowl and other aquatic birds retire to the ſea-ſhore or marſhes, it indicates a change of weather and a ſudden ſtorm.

15. If the cranes fly exceedingly high, in ſilence and arranged in order,

order, it is a ſign of approaching fine weather; but, if they fly in diſorder, or immediately return with cries, it announces wind.

16. When the dolphins ſport and make frequent leaps, the ſea being tranquil and calm, it denotes that the wind will blow from that quarter from which they proceed.

17. If the frogs croak more than uſual, if the toads iſſue from their holes in the evening in great numbers; if the earth-worms come forth from the earth, and ſcorpions appear on the walls; if the ants remove their eggs from their ſmall hills; if the moles throw up the earth more than uſual; if the aſſes frequently ſhake and agitate their ears; if the hogs ſhake and ſpoil the ſtalks of corn; if the bats ſend forth cries, and fly into the houſes; if the dogs roll on the ground, and ſcratch up the earth with their fore-feet; if the cows look towards the heavens, and turn up their noſtrils as if catching ſome ſmell; if the oxen lick their fore-feet, and if oxen and dogs lie on their right ſide; all theſe are ſigns which announce rain.

18. The caſe is the ſame when animals crowd together.

19. When goats and ſheep are more obſtinate and more deſirous to croſs their paſtures, and ſeem to quit them with reluctance; and when the birds return ſlowly to their neſts, rain may ſoon be expected.

Other Signs which announce Changes of the Weather.

1. If the flame of a lamp crackles or flares, it indicates rainy weather.

2. The caſe is the ſame when the ſoot detaches itſelf from the chimney and falls down.

3. It is a ſign of rain, alſo, when the ſoot collected around pots or kettles takes fire in the form of ſmall points like grains of millet; becauſe this phenomenon denotes that the air is cold and moiſt.

4. If the coals ſeem hotter than uſual, or if the flame is more agitated, though the weather be calm at the time, it indicates wind.

5. When the flame burns ſteady, and proceeds ſtraight upwards, it is a ſign of fine weather.

6. If the ſound of bells is heard at a great diſtance, it is a ſign of wind, or of a change of weather.

7. The hollow ſound of foreſts; the murmuring noiſe of the waves of the ſea; their foaming, and green and black colour, announce a ſtorm.

8. Good or bad ſmells, ſeeming as if it were condenſed, are a ſign of a change of weather; either becauſe exhalations ariſe and are diſperſed in more abundance, which is a ſign of an increaſe of electricity; or becauſe the air does not diſpel or raiſe theſe exhalations, which indicates that the conſtitution of the atmoſphere is motionleſs, light, and void of elaſticity.

9. When the ſpiders webs and the leaves of the trees are agitated without any ſenſible wind, it is a ſign of wind, and perhaps of rain; becauſe it denotes that ſtrong and penetrating exhalations ariſe from the earth.

10. Theſe ſigns are leſs equivocal when the dry leaves and chaff are agitated in a vortex, and raiſed into the air.

11. A frequent change of wind, accompanied with an agitation of the clouds, denotes a ſudden ſtorm.

12. A want or too great a quantity of dew, being a mark of a ſtrong

evaporation, announces rain: the caſe is the ſame with thick white hoar-froſt, which is only dew congealed.

13. If ſalt, marble, and glaſs, become moiſt ſome days before rain; if articles of wood, doors, and cheſts of drawers, ſwell; if the corns on the feet and the ſcars of old wounds become painful; all theſe ſigns indicate that aqueous vapours are exhaled from the earth, and are no doubt directed by the electric matter, which diffuſes itſelf then in greater abundance and penetrates every body. Hence it happens that ſtones become moiſt, that wood ſwells, and ſalt becomes deliqueſcent by the moiſture. When the ſtones after being moiſt become dry, it is a ſign of fine weather.

14. On the other hand, when the weather inclines to rain, the water is ſeen to diminiſh in vaſes and fountains, becauſe the humidity is then carried away by the evaporation of the electric matter.

15. It is certainly a ſurpriſing phenomenon to ſee the earth, after very long and very abundant rains, to be ſometimes almoſt dry, the roads quite free from dirt, and the hands to become arid and parched. This is a ſign that the rain has not altogether ceaſed, and denotes a continual efflux of electric matter, which being renewed carries with it, in the form of vapours, all the moiſture that falls on the earth.

16. There is ſometimes, however, a great deal of dirt even after a very moderate rain, which in that caſe is a ſign of fine weather, becauſe it indicates that evaporation has ceaſed. Dry ſtones and moiſt earth announce fine weather; dry earth and moiſt ſtones announce rain.

17. The winds which begin to blow in the day-time, are much ſtronger, and endure longer, than thoſe which begin to blow only in the night.

18. Weather, whether good or bad, which takes place in the night-time, is not, in general, of long duration; and, for the moſt part, wind is more uncommon in the night than in the day-time. Fine weather in the night, with ſcattered clouds, does not laſt.

19. A Venetian proverb ſays, that a ſudden ſtorm from the north does not laſt three days.

20. The hoar-froſt, which is firſt occaſioned by the eaſt wind, indicates that the cold will continue a long time, as was the caſe in 1770.

21. If it thunders in the month of December, moderate and fine weather may be expected.

22. If it thunders at intervals in the ſpring time, before the trees have acquired leaves, cold weather is ſtill to be expected.

23. If the wind does not change, the weather will remain the ſame.

Such almoſt are the ſigns of the variations of the atmoſphere; but I will not be anſwerable for the certainty of them all. Plutarch, in his Problems, where it is aſked why a horſe who has eſcaped from a wolf becomes fleeter, replies, that becauſe, by a ſingle action, but executed with great force and vigour, he has acquired a diſpoſition to running and a habit of ſpeed; or perhaps, becauſe he is naturally ſwift and agile: but he adds, perhaps neither of theſe is true. This obſervation, I am afraid, will apply to ſome of the vulgar prognoſtics of the preſent day. For example, we are told, that it is a ſign of fertility in any year when a fly is engendered in an acorn of that year; and that it is the ſign of a peſtilential year, if there iſſues from it a ſpider. Should the reaſon be aſked, it might be replied, that neither of theſe is true. I might venture to ſay as much of thoſe

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popular tales in regard to certain critical days of the month; yet we muſt ſtill have ſome reſpect for popular proverbs, which are often founded on obſervation and reaſon. Thus it is ſaid, that if it rains on the 3d of May, the day of the Holy Croſs; or on the 23d of April, St. George's day; or the 15th of June, St. Vitus's day, &c. in the firſt caſe the nuts will be ſpoiled; in the ſecond, the figs; and in the third, the grapes. All this may be true to a certain degree, that is to ſay, when it rains for a certain number of days about theſe periods; becauſe, if rain falls at the time when fruit-trees are in bloſſom, it carries off the fecundating farina, and by theſe means renders them barren.

In regard to the general qualities of the ſeaſons, and their influence, attention may be paid to the following ſigns:—If the earth and air abound with inſects, worms, frogs, locuſts, &c. if the walnut-tree has more leaves than fruit; if there are large quantities of beans, fruit, and fiſh; if the ſpring and ſummer are too damp; if hoar-froſt, fogs, and dew, come on at times when they are not generally ſeen; the year will be barren: the oppoſite ſigns announce fertility and abundance. Animals ſeem alſo to foreſee and prognoſticate fertility or barrenneſs: it is ſaid that when the birds flock together, quit the woods and iſlands, and retire to the fields, villages, and towns, it is a ſign that the year will be barren.

A great quantity of ſnow in winter promiſes a fertile year, but abundant rains give reaſon to apprehend that it will be barren. A winter, during which a great deal of ſnow and rain falls, announces a very warm ſummer. It is generally believed that thunder and ſtorms in winter prognoſticate abundance, becauſe they fertiliſe the earth. When the ſpring is rainy, it produces an abundant crop of hay and of uſeleſs herbs, but at the ſame time a ſcarcity and dearth of grain. If it is warm, there will be plenty of fruit, but they will be almoſt all ſpoilt. If it is cold and dry, there will be few fruit or grapes, and ſilk-worms will not thrive. If it is only dry, there will be few fruit, but they will be good. In the laſt place, if it is cold, the fruit will be late in coming to maturity.

If the ſpring and ſummer are both damp, or even both dry, a ſcarcity and dearth of proviſions is to be apprehended. If the ſummer is dry, there will be little corn: diſeaſes will alſo prevail; but they will be more numerous if it is warm. If it is moderately cold, the corn will be late; but there will be a great deal of it; and the ſeaſon will occaſion few diſeaſes.

A fine autumn announces a winter during which winds will prevail: if it is damp and rainy, it ſpoils the grapes, injures the ſown fields, and threatens a ſcarcity. If it be too cold, or too warm, it produces many maladies. A long ſeverity of the ſeaſons, either by winds, drought, dampneſs, heat, or cold, becomes exceeding deſtructive to plants and animals. In general, there is a compenſation for rain or drought between one ſeaſon and another. A damp ſpring or ſummer is commonly followed by a fine autumn. If the winter is rainy, the ſpring will be dry; and, if the former is dry, the latter will be damp. When the autumn is fine, the ſpring will be rainy. That this alternation is in general verified may be ſeen in a Journal carried on for forty years, and formerly edited by M. de Poleni.

Of WONDER, or the EFFECTS of NOVELTY.

IT is evident that the mind takes pleaſure in obſerving the reſemblances that are diſcoverable betwixt different objects. It is by means of ſuch obſervations that it endeavours to arrange and methodiſe all its ideas, and to reduce them into proper claſſes and aſſortments. Where it can obſerve but one ſingle quality, that is common to a great variety of otherwiſe widely different objects, that ſingle circumſtance will be ſufficient for it to connect them all together, to reduce them to one common claſs, and call them by one general name. It is thus that all things endowed with a power of ſelf-motion, beaſts, birds, fiſhes, inſects, are claſſed under the general name of animal; and that theſe again, along with thoſe which want that power, are arranged under the ſtill more general word ſubſtance: and this is the origin of thoſe aſſortments of objects and ideas which in the ſchools are called genera and ſpecies, and of thoſe abſtract and general names, which in all languages are made uſe of to expreſs them.

The farther we advance in knowledge and experience, the greater number of diviſions and ſubdiviſions of thoſe genera and ſpecies we are both inclined and obliged to make. We obſerve a greater variety of particularities among thoſe things which have a groſs reſemblance; and having made new diviſions of them, according to thoſe newly-obſerved particularities, we are then no longer to be ſatisfied with being able to refer an object to a remote genus, or very general claſs of things, to many of which it has but a looſe and imperfect reſemblance. A perſon, indeed, unacquainted with botany may expect to ſatisfy your curioſity, by telling you, that ſuch a vegetable is a weed, or, perhaps in ſtill more general terms, that it is a plant. But a botaniſt will neither give nor accept of ſuch an anſwer. He has broken and divided that great claſs of objects into a number of inferior aſſortments, according to thoſe varieties which his experience has diſcovered among them; and he wants to refer each individual plant to ſome tribe of vegetables, with all of which it may have a more exact reſemblance, than with many things comprehended under the extenſive genus of plants. A child imagines that it gives a ſatisfactory anſwer when it tells you, that an object whoſe name it knows not, is a thing, and fancies that it informs you of ſomething, when it thus aſcertains to which of the two moſt obvious and comprehenſive claſſes of objects a particular impreſſion ought to be referred; to the claſs of realities or ſolid ſubſtances which it calls *things*, or to that of appearances which it calls *nothings*.

Whatever, in ſhort, occurs to us, we are fond of referring to ſome ſpecies or claſs of things, with all of which it has a nearly exact reſemblance; and, though we often know no more about them than about it, yet we are apt to fancy that, by being able to do ſo, we ſhow ourſelves to be better acquainted with it, and to have a more thorough inſight into its nature. But when ſomething quite new and ſingular is preſented, we feel ourſelves incapable of doing this. The memory cannot, from all its ſtores, caſt up any image that nearly reſembles this ſtrange appearance. If by ſome of its qualities it ſeems to reſemble, and to be connected with, a ſpecies which we have before been

been acquainted with, it is by others separated and detached from that, and from all the other assortments of things we have hitherto been able to make. It stands alone and by itself in the imagination, and refuses to be grouped or confounded with any set of objects whatever. The imagination and memory exert themselves to no purpose, and in vain look around all their classes of ideas in order to find one under which it may be arranged. They fluctuate to no purpose from thought to thought, and we remain still uncertain and undetermined where to place it, or what to think of it. It is this fluctuation and vain recollection, together with the emotion or movement of the spirits that they excite, which constitute the sentiment properly called *wonder*, and which occasion that staring, and sometimes that rolling of the eyes, that suspension of the breath, and that swelling of the heart, which we may all observe, both in ourselves and others, when wondering at some new object, and which are the natural symptoms of uncertain and undetermined thought. What sort of a thing can that be? What is that like? are the questions which, upon such an occasion, we are all naturally disposed to ask. If we can recollect many such objects which exactly resemble this new appearance, and which present themselves to the imagination naturally, and as it were of their own accord, our wonder is entirely at an end. If we can recollect but a few, and which it requires too some trouble to be able to call up, our wonder is indeed diminished, but not quite destroyed. If we can recollect none, but are quite at a loss, it is the greatest possible.

With what curious attention does a naturalist examine a singular plant, or a singular fossil, that is presented to him? He is at no loss to refer it to the general genus of plants or fossils; but this does not satisfy him, and, when he considers all the different tribes or species of either with which he has hitherto been acquainted, they all, he thinks, refuse to admit the new object among them. It stands alone in his imagination, and as it were detached from all the other species of that genus to which it belongs. He labours, however, to connect it with some one or other of them. Sometimes he thinks it may be placed in this, and sometimes in that other assortment; nor is he ever satisfied, till he has fallen upon one which, in most of its qualities, it resembles. When he cannot do this, rather than it should stand quite by itself, he will enlarge the precincts of some species, in order to make room for it; or he will create a new species on purpose to receive it, and call it a play of nature, or give it some other appellation, under which he arranges all the oddities that he knows not what else to do with. But to some class or other of known objects he must refer it, and betwixt it and them he must find out some resemblance or other, before he can get rid of that wonder, that uncertainty and anxious curiosity, excited by its singular appearance, and by its dissimilitude with all the objects he had hitherto observed.

As single and individual objects thus excite our wonder when, by their uncommon qualities and singular appearance, they make us uncertain to what species of things we ought to refer them; so a succession of objects which follow one another in an uncommon train or order, will produce the same effect, though there be nothing particular in any one of them taken by itself.

When one accustomed object appears after another, which it does not

not uſually follow, it firſt excites, by its unexpectedneſs, the ſentiment properly called ſurpriſe, and afterwards, by the ſingularity of the ſucceſſion, or order of its appearance, the ſentiment properly called wonder. We ſtart and are ſurpriſed at ſeeing it there, and then wonder how it came there. The motion of a ſmall piece of iron along a plain table is in itſelf no extraordinary object, yet the perſon who firſt ſaw it begin, without any viſible impulſe, in conſequence of the motion of a loadſtone at ſome little diſtance from it, could not behold it without the moſt extreme ſurpriſe; and, when that momentary emotion was over, he would ſtill wonder how it came to be conjoined to an event with which, according to the ordinary train of things, he could have ſo little ſuſpected it to have any connection.

When two objects, however unlike, have often been obſerved to follow each other, and have conſtantly preſented themſelves to the ſenſes in that order, they come to be ſo connected together in the fancy, that the idea of the one ſeems, of its own accord, to call up and introduce that of the other. If the objects are ſtill obſerved to ſucceed each other as before, this connection, or, as it has been called, this aſſociation of their ideas, becomes ſtricter and ſtricter, and the habit of the imagination to paſs from the conception of the one to that of the other, grows more and more rivetted and confirmed. As its ideas move more rapidly than external objects, it is continually running before them, and therefore anticipates, before it happens, every event which falls out according to this ordinary courſe of things. When objects ſucceed each other in the ſame train in which the ideas of the imagination have thus been accuſtomed to move, and in which, though not conducted by that chain of events preſented to the ſenſes, they have acquired a tendency to go on of their own accord, ſuch objects appear all cloſely connected with one another, and the thought glides eaſily along them, without effort and without interruption. They fall in with the natural career of the imagination; and, as the ideas which repreſented ſuch a train of things would ſeem all mutually to introduce each other, every laſt thought to be called up by the foregoing, and to call up the ſucceeding; ſo when the objects themſelves occur, every laſt event ſeems, in the ſame manner, to be introduced by the foregoing, and to introduce the ſucceeding. There is no break, no ſtop, no gap, no interval. The ideas excited by ſo coherent a chain of things ſeem, as it were, to float through the mind of their own accord, without obliging it to exert itſelf, or to make any effort in order to paſs from one of them to another.

But if this cuſtomary connection be interrupted, if one or more objects appear in an order quite different from that to which the imagination has been accuſtomed, and for which it is prepared, the contrary of all this happens. We are at firſt ſurpriſed by the unexpectedneſs of the new appearance, and, when that momentary emotion is over, we ſtill wonder how it came to occur in that place. The imagination no longer feels the uſual facility of paſſing from the event which goes before to that which comes after. It is an order or law of ſucceſſion to which it has not been accuſtomed, and which it therefore finds ſome difficulty in following, or in attending to. The fancy is ſtopped and interrupted in that natural movement or career, according to which it was proceeding. Thoſe two events ſeem to

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ſtand at a diſtance from each other; it endeavours to bring them together, but they refuſe to unite; and it feels, or imagines it feels, ſomething like a gap or interval betwixt them. It naturally heſitates, and, as it were, pauſes upon the brink of this interval; it endeavours to find out ſomething which may fill up the gap, which, like a bridge, may ſo far, at leaſt, unite thoſe ſeemingly diſtant objects, as to render the paſſage of the thought betwixt them ſmooth, and natural, and eaſy. The ſuppoſition of a chain of intermediate, though inviſible, events, which ſucceed each other in a train ſimilar to that in which the imagination has been accuſtomed to move, and which link together thoſe two disjointed appearances, is the only means by which the imagination can fill up this interval, is the only bridge which, if one may ſay ſo, can ſmooth its paſſage from one object to the other. Thus, when we obſerve the motion of the iron, in conſequence of that of the loadſtone, we gaze and heſitate, and feel a want of connection betwixt two events which follow one another in ſo unuſual a train. But when, with Des Cartes, we imagine certain inviſible effluvia to circulate round one of them, and by their repeated impulſes to impel the other, both to move towards it, and to follow its motion, we fill up the interval betwixt them, we join them together by a ſort of bridge, and thus take off that heſitation and difficulty which the imagination felt in paſſing from the one to the other. That the iron ſhould move after the loadſtone ſeems, upon this hypotheſis, in ſome meaſure according to the ordinary courſe of things. Motion after impulſe is an order of ſucceſſion with which, of all things, we are the moſt familiar. Two objects which are ſo connected ſeem no longer to be disjoined, and the imagination flows ſmoothly and eaſily along them.

Such is the nature of this ſecond ſpecies of wonder, which ariſes from an unuſual ſucceſſion of things. The ſtop which is thereby given to the career of the imagination, the difficulty which it finds in paſſing along ſuch disjointed objects, and the feeling of ſomething like a gap or interval betwixt them, conſtitute the whole eſſence of this emotion. Upon the clear diſcovery of a connecting chain of intermediate events, it vaniſhes altogether. What obſtructed the movement of the imagination is then removed. Who wonders at the machinery of the opera-houſe who has once been admitted behind the ſcenes? In the wonders of nature, however, it rarely happens that we can diſcover ſo clearly this connecting chain. With regard to a few even of them, indeed, we ſeem to have been really admitted behind the ſcenes, and our wonder accordingly is entirely at an end. Thus the eclipſes of the ſun and moon, which once, more than all the other appearances in the heavens, excited the terror and amazement of mankind, ſeem now no longer to be wonderful, ſince the connecting chain has been found out which joins them to the ordinary courſe of things.

That the imagination feels a real difficulty in paſſing along two events which follow one another in an uncommon order, may be confirmed by many obvious obſervations. If it attempts to attend beyond a certain time to a long ſeries of this kind, the continual efforts it is obliged to make, in order to paſs from one object to another, and thus follow the progreſs of the ſucceſſion, ſoon fatigue it, and, if repeated too often, diſorder and diſjoint its whole frame. It is thus that too ſevere an application to ſtudy ſometimes brings

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on lunacy and frenzy, in thoſe eſpecially who are ſomewhat advanced in life, but whoſe imaginations, from being too late in applying, have not got thoſe habits which diſpoſe them to follow eaſily the reaſonings in the abſtract ſciences. Every ſtep of a demonſtration, which to an old practitioner is quite natural and eaſy, requires from them the moſt intenſe application of thought. Spurred on, however, either by ambition, or by admiration for the ſubject, they ſtill continue till they become, firſt confuſed, then giddy, and at laſt diſtracted. Could we conceive a perſon of the ſoundeſt judgment, who had grown up to maturity, and whoſe imagination had acquired thoſe habits, and that mould, which the conſtitution of things in this world neceſſarily impreſs upon it, to be all at once tranſported alive to ſome other planet, where nature was governed by laws quite different from thoſe which take place here; as he would be continually obliged to attend to events, which muſt to him appear in the higheſt degree jarring, irregular, and diſcordant, he would ſoon feel the ſame confuſion and giddineſs begin to come upon him, which would at laſt end in the ſame manner, in lunacy and diſtraction. Neither, to produce this effect, is it neceſſary that the objects ſhould be either great or intereſting, or even uncommon in themſelves. It is ſufficient that they follow one another in an uncommon order. Let any one attempt to look over even a game of cards, and to attend particularly to every ſingle ſtroke: and if he is unacquainted with the nature and rules of the game; that is, with the laws which regulate the ſucceſſion of the cards; he will ſoon feel the ſame confuſion and giddineſs begin to come upon him, which, where it to be continued for days and months, would end in the ſame manner, in lunacy and diſtraction. But if the mind be thus thrown into the moſt violent diſorder, when it attends to a long ſeries of events which follow one another in an uncommon train, it muſt feel ſome degree of the ſame diſorder, when it obſerves even a ſingle event fall out in this unuſual manner: for the violent diſorder can ariſe from nothing but the too frequent repetition of this ſmaller uneaſineſs.

That it is the unuſualneſs alone of the ſucceſſion which occaſions this ſtop and interruption in the progreſs of the imagination, as well as the notion of an interval betwixt the two immediately ſucceeding objects, to be filled up by ſome chain of intermediate events, is not leſs evident. The ſame orders of ſucceſſion, which to one ſet of men ſeem quite according to the natural courſe of things, and ſuch as require no intermediate events to join them, ſhall to another appear altogether incoherent and disjointed, unleſs ſome ſuch events be ſuppoſed: and this for no other reaſon, but becauſe ſuch orders of ſucceſſion are familiar to the one, and ſtrange to the other. When we enter the work-houſes of the moſt common artizans; ſuch as dyers, brewers, diſtillers, we obſerve a number of appearances, which preſent themſelves in an order that ſeems to us very ſtrange and wonderful. Our thought cannot eaſily follow it, we feel an interval betwixt every two of them, and require ſome chain of intermediate events, to fill it up, and link them together. But the artizan himſelf, who has been for many years familiar with the conſequences of all the operations of his art, feels no ſuch interval. They fall in with what cuſtom has made the natural movement of his imagination: they no longer excite his wonder, and if he is not a genius ſuperior to his profeſſion, ſo as to be capable of making the

the very eaſy reflection, that thoſe things, though familiar to him, may be ſtrange to us, he will be diſpoſed rather to laugh at than ſympathiſe with our wonder. He cannot conceive what occaſion there is for any connecting events to unite thoſe appearances, which ſeem to him to ſucceed each other very naturally. It is their nature, he tells us, to follow one another in this order, and that accordingly they always do ſo. In the ſame manner bread has, ſince the world began, been the common nouriſhment of the human body, and men have ſo long ſeen it, every day, converted into fleſh and bones, ſubſtances in all reſpects ſo unlike it, that they have ſeldom had the curioſity to enquire by what proceſs of intermediate events this change is brought about. Becauſe the paſſage of the thought from the one object to the other is by cuſtom become quite ſmooth and eaſy, almoſt without the ſuppoſition of any ſuch proceſs. Philoſophers, indeed, who often look for a chain of inviſible objects to join together two events that occur in an order familiar to all the world, have endeavoured to find out a chain of this kind betwixt the two events I have juſt now mentioned; in the ſame manner as they have endeavoured, by a like intermediate chain, to connect the gravity, the elaſticity, and even the coheſion, of natural bodies, with ſome of their other qualities. Theſe, however, are all of them ſuch combinations of events as give no ſtop to the imaginations of the bulk of mankind, as excite no wonder, nor any apprehenſion that there is wanting the ſtricteſt connection between them. But as in thoſe ſounds, which to the greater part of men ſeem perfectly agreeable to meaſure and harmony, the nicer ear of a muſician will diſcover a want, both of the moſt exact time, and of the moſt perfect coincidence: ſo the more practiſed thought of a philoſopher, who has ſpent his whole life in the ſtudy of the connecting principles of nature, will often feel an interval betwixt two objects, which, to more careleſs obſervers, ſeem very ſtrictly conjoined. By long attention to all the connections which have ever been preſented to his obſervation, by having often compared them with one another, he has, like the muſician, acquired a nicer ear, and a more delicate feeling, with regard to things of this nature. And as to the one, that muſic ſeems diſſonance which falls ſhort of the moſt perfect harmony; ſo to the other, thoſe events ſeem altogether ſeparated and disjoined, which fall ſhort of the ſtricteſt and moſt perfect connection.

Philoſophy is the ſcience of the connecting principles of nature. Nature, after the largeſt experience that common obſervation can acquire, ſeems to abound with events which appear ſolitary and incoherent with all that go before them, which therefore diſturb the eaſy movement of the imagination; which make its ideas ſucceed each other by irregular ſtarts and ſallies; and which thus tend, in ſome meaſure, to introduce thoſe confuſions and diſtractions we formerly mentioned. Philoſophy, by repreſenting the inviſible chains which bind together all theſe disjointed objects, endeavours to introduce order into this chaos of jarring and diſcordant appearances, to allay this tumult of the imagination, and to reſtore it, when it ſurveys the great revolutions of the univerſe, to that tone of tranquillity and compoſure, which is both moſt agreeable in itſelf, and moſt ſuitable to its nature. Philoſophy, therefore, may be regarded as one of thoſe arts which addreſs themſelves to the imagination; and whoſe theory and hiſtory, upon that account, fall properly

within the circumference of our ſubject. It is the moſt ſublime of all the agreeable arts, and its revolutions have been the greateſt, the moſt frequent, and the moſt diſtinguiſhed, of all thoſe that have happened in the literary world. Its hiſtory, therefore, muſt upon all accounts be the moſt entertaining and the moſt inſtructive. For this reaſon we ought to examine all the different ſyſtems of nature, which, in theſe weſtern parts of the world, the only parts of whoſe hiſtory we know any thing, have ſucceſſively been adopted by the learned and ingenious; and, without regarding their abſurdity or probability, their agreement or inconſiſtency with truth and reality, we ſhould conſider them only in that particular point of view which belongs to our ſubject; and content ourſelves with inquiring how far each of them was fitted to ſoothe the imagination, and to render the theatre of nature a more coherent, and therefore a more magnificent, ſpectacle, than otherwiſe it would have appeared to be. According as they have failed or ſucceeded in this, they have conſtantly failed or ſucceeded in gaining reputation and renown to their authors; and this will be found to be the clue that is moſt capable of conducting us through all the labyrinths of philoſophical hiſtory: for, in the mean time, it will ſerve to confirm what has gone before, and to throw light upon what is to come after, that we obſerve, in general, that no ſyſtem how well ſoever in other reſpects ſupported, has ever been able to gain any general credit on the world, whoſe connecting principles were not ſuch as were familiar to all mankind. Why has the chemical philoſophy in all ages crept along in obſcurity, and been ſo diſregarded by the generality of mankind, while other ſyſtems, leſs uſeful, and not more agreeable to experience, have poſſeſſed univerſal admiration for whole centuries together? The connecting principles of the chemical philoſophy are ſuch as the generality of mankind know nothing about, have rarely ſeen, and have never been acquainted with; and which to them, therefore, are incapable of ſmoothing the paſſage of the imagination betwixt any two ſeemingly diſjointed objects. Salts, ſulphurs, and mercuries, acids, and alkalies, are principles which can ſmooth things to thoſe only who live about the furnace; but whoſe moſt common operations ſeem, to the bulk of mankind, as diſjointed as any two events which the chemiſts would connect together by them. Thoſe artiſts, however, naturally explained things to themſelves by principles that were familiar to themſelves. As Ariſtotle obſerves, that the early Pythagoreans, who firſt ſtudied arithmetic, explained all things by the properties of numbers; and Cicero tells us, that Ariſtoxenus, the muſician, found the nature of the ſoul to conſiſt in harmony. In the ſame manner, a learned phyſician lately gave a ſyſtem of moral philoſophy upon the principles of his own art, in which, wiſdom and virtue were the healthful ſtate of the ſoul; the different vices and follies, the different diſeaſes to which it was ſubject; in which the cauſes and ſymptoms of thoſe diſeaſes were aſcertained; and, in the ſame medical ſtrain, a proper method of cure preſcribed. In the ſame manner alſo, others have written parallels of painting and poetry, of poetry and muſic, of muſic and architecture, of beauty and virtue, of all the fine arts; ſyſtems which have univerſally owed their origin to the lucubrations of thoſe who were acquainted with the one art, but ignorant of the other; who therefore explained to themſelves the phænomena,

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in that which was ſtrange to them, by thoſe in that which was familiar; and with whom, upon that account, the analogy, which in other writers gives occaſion to a few ingenious ſimilitudes, became the great hinge upon which every thing turned.

DIVISION OF TIME.

THE queſtion reſpecting the day of the month on which the preſent century ought to terminate, whether on the 30th of December, or on the 31ſt; the following arguments have been adduced in ſupport of the former:

There is no correct account reſpecting the ancient diviſion of time; it is ſaid by ſome, the Egyptian years were our months: the Arcadians divided their year into three months, the Romans into ten. This diviſion Romulus made, viz. March, April, May, June, Quintilis, Sextilis, September, October, November, and December; Quintilis and Sextilis were afterwards changed into July and Auguſt, in honour of the two Cæſars. Numa added January and February. Even this increaſe divided the year into only 354 days; the eleven days he doubled every ſecond year, and made another month, called Mercedonis; this intercalation was left to the prieſts, who frequently omitted it: thus feaſts fell on different times. Julius Cæſar, to rectify this, made one year 15 months; he then added the 11 days to the 355, making the year 365 days, equal to the courſe of the ſun within ſix hours; theſe hours were left alone till they made one day; every fourth he placed this day in that part of the calendar where the intercalary month uſed to be put, viz. five days before the end of February, and ſixth of the calends of March; for this year the ſupernumerary day was called Biſſextus; this is called the Julian period, and would have been correct, had the ſun apparently finiſhed its revolution in 365 days 6 hours. The interval of time from the ſun's leaving the firſt point of Aries, till his return to it, is 365 days, five hours, 48 minutes, and 48 ſeconds, being 11 minutes and 12 ſeconds leſs than the Julian computation: this in a century makes a difference of 18 hours 24 ſeconds.—At the time of the council of Nice, in 1582, it was found that the ſun had entered the equinoctial circle on the 11th of March inſtead of the 21ſt. Pope Gregory XIII. took theſe ten days out, and ordered that the 11th ſhould be deemed the 21ſt. This was called New Stile, and immediately adopted in every country which acknowledged the pope's ſupremacy—not admitted in England till the middle of this century. To prevent this difference again occurring, the pope ordered every 100th year ſhould be a common year, not a leap-year. This will lead into an error on the contrary ſide; every century the difference does not amount to one day; to render it more equal, every 400th year ſhould be leap-year. Thus the century ſhould cloſe on the 30th of December, and at the ſame day; three centuries out of four.

THE SPIDER.

THE ſpider, of all the domeſtic inſects, has hitherto been moſt generally abhorred, owing partly to its hideous form, and partly to the idea of its being poiſonous. A diſcovery was, however, made ſome years ago, by Mr. Quatremere d'Iſjonväl, adjutant-general

neral to General Pichegru, that this infect is not ſo uſeleſs as it is generally thought. It is generally known, that the ſtate of the atmoſphere has a viſible effect upon certain animals, and that for inſtance cats, dogs, frogs, hogs, &c. have a very ſtrong preſentiment of every change which is preparing in it. The above-mentioned gentleman has diſcovered that the ſpider poſſeſſes this quality in a more eminent degree than all other animals.

The ſpider, ſays Mr. Q. d'Iſjonval, is a more unerring indicator of impending changes in the atmoſphere than the beſt barometer. Theſe inſects have two different ways of weaving their webs, by which we can know what weather we are to have. When the weather inclines to turn rainy or windy, they make the principal threads, which are the foundation as it were of their whole web, very ſhort, and rather thick; whereas they ſpin them much longer when fine and warm weather is to be expected. Thence it appears clearly, that the ſpiders have not only a near but alſo a diſtant preſentiment of the changes which are preparing in the air. The barometer foretels the ſtate of the weather with certainty only for about twenty-four hours, whereas we may be ſure that the weather will be fine twelve or fourteen days, when the ſpider makes the principal threads of its web long. It is obvious how important the conſequences of this infallible indication of the ſtate of the weather muſt be in many inſtances, particularly with regard to the operations of agriculture; for which reaſon it has been frequently lamented, that the beſt barometers, hydrometers, thermometers, and eudiometers, are principally in the hands of the conſumers, and very rarely in thoſe of the planters, of the harveſt. How fortunate is it, therefore, that provident Nature, amongſt other gifts, alſo has beſtowed upon the cultivator of the country ſuch a cheap inſtrument, upon the ſenſibility and infallibility of which, with regard to the impending changes in the atmoſphere, he can rely! The barometers are frequently very fallible guides, particularly when they point to ſettled fair; whereas the work of the ſpider never fails to give the moſt certain information. This inſect, which is one of the moſt œconomical animals, does not go to work, nor expends ſuch a great length of threads, which it draws out of its body, before the moſt perfect equilibrium of all the conſtituent parts of the air indicates with certainty that this great expenditure will not be made in vain. Let the weather be ever ſo bad, we may conclude with certainty that it will not laſt long, and ſoon change for ſettled fair, when we ſee the ſpider repair the damages which his web has received. Thoſe who will take the trouble to watch the operations of this uſeful inſect, will be convinced, by experience, that Mr. Q. d'Iſjonval deſerves the thanks of his cotemporaries for the communication of his important diſcovery, and, in future, ſhew more indulgence to this object of almoſt general abhorrence than they have done hitherto.

WET DOCKS AT WAPPING.

ON a ſubject ſo intereſting to the mercantile part of the metropolis as the preſent, we conceive that many of our readers may wiſh for more information than what has yet been laid before the public. The following is the topographical deſcription of thoſe works which are

are intended to be carried into execution by the Weſt-India and other merchants, and which only wait for the ſanction of parliament.

The place where they are to be formed is that low flat part of Wapping which lies between Ratcliff-highway and the river Thames, and between each extremity of which the river forms an arch of about one third of a circle; namely, from Shadwell-dock to Hermitage-dock, at both which places there are to be gates; the former for the entrance of large ſhips, the latter for craft. There is alſo to be another gate for large ſhips at Wapping Old Stairs; at the entrance of which and the Shadwell gates, there is to be a baſon at each; beſides which, there will be three large docks that will accommodate 390 ſhips with room for ſhifting and lighters. The two baſons will contain 50 ſhips; ſo that there will be in all 440 loaded ſhips. There is to be another dock at the entrance of Hermitage gates, for the uſe of lighters and craft. The premiſes conſiſt at preſent principally of gardens, meadows, waſtes, and rope-grounds. Round each dock and baſon there are to be quays and warehouſes for landing and ſtoring of goods, and the whole premiſes will be ſurrounded by walls. The boundaries will be Pennington-ſtreet on the north ſide, the direct line of which ſtreet is to be continued as far as Fox's-lane, which will be the boundary on the eaſt. Nightingale-lane, will bound the premiſes on the weſt, and Hermitage-ſtreet and Worceſter-ſtreet, form part of the boundaries on the ſouth ſide.

This plan, which for the laſt three or four years has been under the conſideration of parliament each ſeſſion, in the ſhape of a bill, without being yet paſſed into a law, underwent a laborious inveſtigation before a committee of the houſe of commons, in the months of February, March, April, and May, laſt. The report of the committee has been printed, together with the proceedings of the committees who ſat on the bill in former ſeſſions.

From all theſe printed documents it appears, that the meaſure has met with very great oppoſition from numbers of perſons, both as public bodies and private individuals. The principal ground of objection has been, the injury which thoſe parties would ſuſtain in regard to property in privileges, in caſe the propoſed docks ſhould be carried into execution. It has been farther objected, that the plan would not anſwer the objects intended by it; becauſe the ſhips for whoſe accommodation it was intended, could not, without great riſk, enter the docks; and that if they did enter they would be very much expoſed to accidents from fire, which, on account of ſhips lying ſo cloſe together, and the difficulty of their ſpeedy removal, would communicate more rapidly than if the ſhips lay in the river. A third objection has been, that of the defalcation which the revenue would ſuffer in conſequence of the deſtruction of ſo many houſes that now pay the king's taxes.

The two latter objections have been principally urged by the city of London in its corporate capacity, whoſe petition to the houſe of commons was referred to the committee on the bill; and evidence was heard in ſupport of it. On this occaſion it was ſtated by three Weſt-India captains, and two Trinity pilots, that the greateſt burthen of ſhips which could in the general courſe of trade come up with ſafety when loaded, as far as the propoſed docks, or which they would truſt ſo far, was from 250 to 260 tons; and that they would not

not venture to bring up ſo far, any ſhip which drew more than 14 or 16 feet of water. This was owing to the number of ſhoals above Deptford, and the interruption from colliers, which often cauſed ſhips drawing 16 feet water to be detained eight, ten, and fourteen, days, while navigated outward, from the Pool to Blackwall. They alſo ſtated, that the lower gates of the propoſed docks at Shadwell could not be uſed unleſs the great body of colliers occupying that place was removed; and there was no other part of the pool where thoſe colliers could find a ſufficient depth of water. And beſides, if loaded ſhips, drawing 16 feet, were to arrive at the propoſed docks, and not be able to get in at the ſame tide (which would frequently happen), they could not lie afloat at either of the gates at low water, particularly in ſpring-tides, or during the continuance of ſtrong weſterly winds, which ſometimes cauſe the water to be four or five feet lower than the natural tides.

On the ground of defalcation in the public revenue, it was ſtated that the number of houſes which would be taken down or deſtroyed amounted to 2,199; the aſſeſſments of theſe amounted to 20,445l. a-year, the rate on which was, in general, 15d. in the pound; and the expence of purchaſing all theſe premiſes would amount to no leſs than a ſum of 511,375l. without including good-will. The city comptroller alſo produced the title of the city of London to the conſervancy of the river Thames and waters of Medway, from the bridge of Staines to a place called Yendall, towards the ſea; which title exiſted by preſcription and charters ſo early as the reign of Richard I. and was confirmed by confeſſion of the attorney-general and judgment of the court of exchequer in the 3d of James I.

Thoſe who objected to the plan on the ground of its injuring their property, were the proprietors of certain quays called Legal Quays, and of warehouſes ſituated thereon: the proprietors of other warehouſes, Mr John Perry, of Blackwall; Meſſrs Wells, of Rotherhithe, ſhip builders; the college of Mary Magdalen, Oxford, which owned certain wharfs in Southwark; the company of the Shadwell water-works, which muſt be deſtroyed if the propoſed docks were made; the owners of Irongate wharfs; the owners of Sufferance wharfs; Mr. Thomas Roycroft, of London, merchant; ſeveral proprietors of ſhip-yards and dry docks, in the port of London; the commiſſioners of ſewers for the Tower hamlets; the churchwardens and overſeers of the pariſh of St. George, Middleſex; the ſcholars of King's-hall and Brazen Noſe college, Oxford, as patrons of the rectory of St. Dunſtan's Stepney, &c. the Rev. Dr. Braithwaite, rector of the ſaid pariſh; the Rev. Dr. Willis, rector of the pariſh of St. John, Wapping; the inhabitants of Billingſgate ward; ditto of Tower ward; the company of watermen, wherrymen, and lightermen, between Graveſend and Windſor; the goldſmiths' company, &c. &c.

In anſwer to theſe and many other important objections, Mr. Daniel Alexander, a ſurveyor, ſtated in evidence to the committee, that he had made a ſurvey of the place intended for the docks in queſtion; that the ſituation of Wapping was a natural marſh, conſiderably below the level of high-water mark, and that in this, as well as in a variety of other reſpects, the making of wet-docks in that ſpot was perfectly eligible and practicable. The depth of water propoſed to be made in the docks was 22 feet; the width of

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the entrance from the river 46 feet, and the number of acres to be excavated, about 51. The fill of the entrance lock was intended to be ſix feet below the low-water mark of a ſpring-tide. He thought it would be practicable, if neceſſary, to deepen the bed of the river in places were there were ſhoals. The number of houſes and tenements to be purchaſed would amount to 2074, of which it would be neceſſary to take down only 1288 for completing all the docks and baſons. The other 786, remaining on the borders of the docks, might be taken down only as convenience ſhould require. Of theſe houſes and tenements, 1483 are old, and many of them falling down; 1170 are rated as poor in the tax-books, or under 6 or 7l. a-year annual value. The majority of the houſes being in a very bad condition, the purchaſe-money of the whole, at eighteen or nineteen years purchaſe, would amount to 370,683l. and he did not conceive that the good will would amount to more than 5l. per cent. on the whole value. The low ſituation deſigned for the docks would conſiderably diminiſh the expence of excavation. Part of theſe docks could be ſo far finiſhed in three years as to afford accommodation to 150 ſail of ſhips; and, if that quantity of accommodation ſhould be found to be ſufficient for the purpoſe, the total execution of the plan would not become neceſſary.

The next perſon examined in ſupport of the bill was Captain Alexander Murray Shields, ſurveyor of ſhipping for the underwriters at Lloyd's. He ſtated, that the inconvenience attending the ſhipping in the port of London, for want of accommodation; the great riſk from the crowded ſtate of the river; and the great delay occaſioned by theſe, were highly injurious to the commerce of London. Ships drawing 18 feet water might navigate with ſafety into the propoſed docks; and, if the dock-gates were made ſix feet below low-water mark, ſhips drawing 20 feet might enter. Large ſhips might deliver better in the deep-water tiers in the pool, than at moſt of the mooring-chains at the Red-houſe, at Deptford. One-eighth part of the Weſt-India ſhips, until the laſt year, delivered at Deptford, for want of accommodation in the pool. Ships of 500 tons, and drawing 18 feet water, have frequently diſcharged in the pool. He knew of no impediments in the navigation from Deptford to the pool, more than from Woolwich to Deptford. He thought, that, if docks were formed at Wapping, ſhips would ſo frequent them as to give greater room in the pool, as well as freedom of navigation in the river; and that the ſhips which would uſually come there would be Weſt-Indian, Levant, Hamburgh, American, and tobacco ſhips in particular. He ſaw docks in other countries, and never knew of any accidents by fire in them; and, if fires were to happen, he thought the riſk would not be greater to ſhips in dock than ſhips in the river. Ships could diſcharge their cargoes with much more expedition in docks than in the river, becauſe ſhips in the river depend on the tides to get down their craft, which often get athwart tiers, and are detained a whole tide.

Mr. John Rennie, a civil engineer, ſaid he had examined the premiſes in queſtion, and was of opinion that the making of docks, baſons, &c. there, was very practicable. The expence of making thoſe works he eſtimated at 591,214l. The uſe of the baſons was to be for ſhips to go into or come out of the tide-way; and the docks were to be the places where veſſels ſhould diſcharge or take in their cargoes.

cargoes. The few ſhoals between the pool and Deptford that might obſtruct the the paſſage of ſhips into the docks, might be levelled at a moderate expence. The walls by which the whole of the premiſes ſhould be ſurrounded would coſt 17,171l. In order to prevent accidents by fire, he would propoſe that extinguiſhing engines ſhould be placed on different parts of the quays, which might be worked by ſteam-engines, and which ſteam-engines would be of great uſe in working the cranes. Floating-engines might alſo be placed in the docks, for the uſe of ſhips moored at a greater diſtance from the quay: but, ſhould even theſe fail, the veſſel on fire might eaſily be ſcuttled. The whole of the docks might be finiſhed in 4 or 5 years.

Several other perſons of great ſkill and experience declared, that the only preventive to large ſhips coming up to the place of the intended docks was the crowded ſtate of the pool, which theſe docks would remedy; that plunderage and ſmuggling would be effectually prevented; and that the revenue, of courſe, would conſiderably increaſe, as well by theſe preventions, as by the great expedition with which ſhips could diſcharge and take in their cargoes. Among theſe witneſſes, Mr. Irving, inſpector of exports and imports of Great Britain, delivered in ſome very ſenſible obſervations, in writing, on the ſubject, wherein he ſtrongly recommended the plan for the accommodation of the port of London, as neceſſary to ſecure, on the return of peace, the continuance of that extenſive commerce the country now poſſeſſes.

The following are the ſentiments of Mr. Irving on this ſubject: "In looking forward to the period of peace, when we may expect that thoſe countries which were formerly our rivals in trade (but whoſe commerce and manufactures have in a great meaſure been annihilated by the war) will attempt to reſume their competition, it will, I am perſuaded, be found highly for the intereſt of this country to remove ſome of thoſe burthenſome regulations under which our trade at preſent labours, in order not only to ſecure a continuance of the extenſive commerce we now poſſeſs; but alſo to extend and improve it in future. Of theſe, the heavy advance of duties at perhaps a much earlier ſtage than the ſafety of the revenue requires, and the immenſe expence of port-charges, particularly in port of London; are objects which more immediately claim attention.

"Commerce early becoming an object of importance in this country, and the merchants being poſſeſſed of a large proportion of the circulating money, it was natural for the ſtate to look to impoſts on trade as a ſource of revenue. This ſyſtem of taxation, which commenced at a period almoſt coeval with the origin of our foreign commerce, has ever ſince been progreſſively extended; and at this time we draw upwards of nine millions of pounds, groſs revenue, from the duties on imports and exports; of which above five millions five hundred thouſand pounds are collected immediately on importation. The advance of ſo large a ſum at a period much earlier than the ſafety or intereſt of the revenue demands, and of which about one million five hundred thouſand pounds are repaid on exportation, muſt not only prove extremely diſtreſſing to the merchant, but alſo the means of actually drawing ſo much money, together with the mercantile credit fairly attached thereto, out of the active capital of trade, for which the public receives no adequate compenſation by the temporary uſe of the money.

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"This heavy advance of duties has alſo hitherto been the means, in part, of depriving us of a branch of trade to which we have the faireſt pretenſions.

"As a general depot of the products both of the north and ſouth of Europe, and alſo of the eaſtern and weſtern world, we poſſeſs many great and ſtriking advantages, from our local ſituation, relatively both to Europe and America; from our poſſeſſing almoſt a complete monopoly of the trade of India and China; from the variety and ſuperior qualities of our manufactures, ſuited to every market; from the powerful influence of our great mercantile and manufacturing capital; and, from the wiſdom, energy, and enterpriſing ſpirit, of our merchants.

"By admitting all the principal articles of merchandize to be depoſited in warehouſes immediately on importation, and requiring no part of the duties to be advanced till delivered out for home conſumption, or, if exported, to be ſubject to no duty whatever, the revenue would alſo, in my humble opinion, be greatly benefited.

"The profit the merchant expects, is generally in proportion to the capital he employs, and to the length of time he is in advance of that capital. Thus, by the duties being paid, perhaps ſix months earlier than (as has already been obſerved) the ſafety of the revenue requires, and from the articles generally paſſing through the hands of ſeveral different dealers, each of whom, conſiders himſelf entitled to a profit on the money he inveſts, the price is greatly advanced to the conſumer, and a powerful temptation is thereby held out to the ſmuggler to enter into a competition with the fair trader. The ſame remark alſo applies, with equal force, to the ſtate of our competition in foreign markets, particularly in Eaſt and Weſt India commodities.

"The buſineſs of the cuſtom-houſe, which, from the preſent complicated ſtate of the laws and regulations, is almoſt entirely tranſacted by brokers, at a very heavy expence to the merchants, would be greatly leſſened by the warehouſing ſyſtem. A cargo, on its arrival, would, perhaps, be admitted into the warehouſe by the operation of one ſingle entry, which every merchant's clerk would, I conceive, be competent to make; and, when delivered out for home conſumption, or for exportation, the entries required would be ſimple and eaſy.

"But this ſyſtem of warehouſing all goods on importation, would be eſſentially aided by the plans which have been in agitation for ſome time paſt, of erecting cloſe docks and warehouſes on the river Thames. Ships on their arrival would proceed directly into thoſe docks, and be diſcharged of their cargoes under the immediate eye of the principal out door officers of the cuſtoms; without being ſubjected, in any degree, to thoſe enormous depredations which are at preſent ſo loudly, and, I believe, ſo juſtly complained of; whilſt a great ſaving would, at the ſame time, accrue to the revenue, by a reduction of the number of officers in what is called the water-guard.

"This ſyſtem would alſo in a great degree put an end to thoſe extenſive frauds, which it is generally admitted have hitherto been practiſed in obtaining drawbacks on goods reported for exportation. Inſtead of the feeble check of an examination by the ſearchers, which, I believe, is the only ſecurity the revenue at preſent has, the goods would be depoſited, immediately on importation, in warehouſes, and there remain in ſecurity until they were conveyed from thence on-board the reſpective veſſels for exportation."

Beſides the above ſtatements, Mr. Irving, in anſwer to queſtions put to him, ſaid, that the commerce of Liverpool and Hull, particularly the former, had rapidly increaſed of late, inſomuch, that in his opinion the exports of Britiſh manufactures from theſe two ports alone exceeded in value the exports from the port of London.

Few people know that 256 years ago, in the 35th year of the reign of King Henry VIII. it was enacted by parliament, that Wapping-Marſh, in the county of Middleſex, ſhould be divided, by certain perſons aſſigned for that purpoſe, or any ſix of them; and that Richard Hill, of London, mercer, (the aſſignee of Cornelius Wanderdelf, who at his own charge had inned and recovered the ſame,) ſhould have one moiety thereof to him and his heirs. The recovery of Wapping from the water, ſeems, therefore, to have been thought a work of great merit in the days of Harry the Eighth; but in our days, ſtrange to tell, it would be thought by many people a work of more merit to replace the water over Wapping again.

ESTABLISHMENT OF A PAUPER POLICE.

THE opulent inhabitants of the cities of London and Weſtminſter have been long diſtinguiſhed for their generous donations in relieving the diſtreſſes of the poor; but, we wiſh to ſee ſomething more effectual than temporary aſſiſtance eſtabliſhed, and, we therefore, recommend to the public the adoption of Mr. Colquhoun's excellent plan for the eſtabliſhment of a police to adminiſter to the wants of the caſual poor in the metropolis. He ſuggeſts the folowing mode of defraying the expence of the eſtabliſhment:

Towards defraying the whole expence of this eſtabliſhment it is propoſed, that (in lieu of the caſual charity, paid at preſent by all the pariſhes in the metropolis, which under this ſyſtem will ceaſe, together with the immenſe trouble attached to it) each pariſh in the metropolis ſhall pay into the hands of the receiver of the funds of this pauper police inſtitution, a ſum equal to what was formerly diſburſed in caſual relief, which, for the purpoſe of elucidation, is eſtimated as follows:—

97 Pariſhes within the walls, average 10l. each	-	£.970 0 0
16 Pariſhes without the walls, average 60l. each	- -	960 0 0
		1,930 0 0
23 Out-pariſhes in Middleſex and Surry, average 100l. each		2,300 0 0
10 Pariſhes in Weſtminſter, average 100l. each	-	1,000 0 0
146		£.5,230 0 0

This ſum (which is ſuppoſed to be not much above one half of the average annual diſburſements of the 146 pariſhes above-mentioned, eſpecially ſince it has been ſhewn, that the expence in St. Giles's and St. George's Bloomſbury alone, has been 2,000l. in one year) will probably, with economy and good management, be found ſufficient for all the relief that is required; more eſpecially as the object is not to maintain the indigent, but to put them in a way of ſupporting themſelves by occaſional pecuniary aids, well and judiciouſly applied.

The experiment is certainly worth trying. In its execution ſome of the moſt reſpectable and moſt intelligent individuals in the metropolis would gratuitouſly aſſiſt the commiſſioners, who, as taking reſpon-

reſponſibility upon them, in the direction of a moſt important branch of police, ought, undoubtedly, to be remunerated by government, eſpecially as it is ſcarcely poſſible to conceive any mode in which the public money could be applied, that would be productive of ſuch benefit to the ſtate.

If that reſulted from the deſign, which may reaſonably be expected, it would of courſe extend to other great towns, as the ſoup eſtabliſhments have done, and the condition of the poor would undergo a rapid change. The deſtitute and forlorn would then have ſome means of communicating their diſtreſs, while information and facts of the greateſt importance, to the beſt intereſts of ſociety, would ſpring from this ſource.

With reſpect to the general affairs of the poor, much good would ariſe from conſolidating the funds of all the pariſhes in the metropolis.

The poor, for inſtance, who are ſupported from the parochial funds of Bethnal Green, and other diſtreſſed pariſhes in the eaſtern parts of the metropolis, are the labourers of the citizens and inhabitants of the 97 pariſhes within the walls, who, although opulent, pay little or nothing to the poor, ſince the city affords no cottages to lodge them.

Why, therefore, ſhould not the inhabitants of the rich pariſhes contribute to the relief of the diſtreſſes of thoſe who waſte their ſtrength in contributing to their eaſe, comfort, and profit? In ſeveral of the moſt populous pariſhes and hamlets in the eaſtern parts of the town, the poor may actually be ſaid to be aſſeſſed to ſupport the indigent. In the very populous hamlet of Mile-End New Town, where there is ſcarcely an inhabitant who does not derive his ſubſiſtence from ſome kind of labour, the rates are treble the aſſeſſments in Mary-le-bonne, where opulence abounds. Nothing can exceed the inequality of the weight for the ſupport of the poor in the metropolis; ſince, where the demand is greateſt, the means of ſupply are always moſt deficient and inadequate.

HOOLE's TRANSLATION OF LEEUWENHOEK.

THE Microſcopical Diſcoveries of the accurate and laborious Leeuwenhoek have been lately tranſlated from the Dutch and Latin by Mr. Samuel Hoole, and are now publiſhing by ſubſcription in parts. We have the tranſlator's permiſſion to make ſome occaſional extracts, though the work is not yet complete. We ſhall begin, without farther apology, from the introduction.

"To thoſe who are acquainted with the works of Mr. Leeuwenhoek, or who have been much converſant in microſcopical ſtudies, this introduction may appear unneceſſary: but, thoſe to whom the ſubject is new, will find ſo many wonders laid open to their view, as perhaps to induce a doubt of the author's accuracy in his obſervations, or his veracity in his narrations. Indeed, the extreme minuteneſs of many of the ſubjects on which he treats, is in ſome inſtances beyond the reach of our capacities to comprehend, although we may be fully aſſured of their exiſtence. In fact, it appears by Mr. Leeuwhenhoek's writings, that the difficulty now ſtated, was made a matter of objection by ſeveral of his co-temporaries; therefore, the following paſſage in his own words, will ſerve to ſtate the objection, and the manner in which it was anſwered by the author himſelf:"

'I have often heard, that many perſons diſpute the truth of what I advance in my writings, ſaying that my narrations concerning animalcules, or minute living creatures, are merely of my own invention. And, it ſeems, ſome perſons in France have even ventured to aſſert, that thoſe are not, in truth, living creatures, which I deſcribe, as diſcoverable to our ſight, and allege, that, after water has been boiled, thoſe particles in it, which I pronounce to be animalcules, will be ſtill obſerved to move. The contrary of this, however, I have demonſtrated to many eminent men, and I will be bold to ſay, that thoſe gentlemen who hold this language, have not attained to a degree of proficiency to obſerve ſuch objects truly. For my own part, I will not ſcruple to aſſert, that I can clearly place before my eye the ſmalleſt ſpecies of thoſe animalcules concerning which I now write, and can as plainly ſee them endued with life, as with the naked eye we behold ſmall flies or gnats ſporting in the open air, though theſe animalcules are more than a million of degrees leſs than a large grain of ſand. For I not only behold their motions in all directions, but I alſo ſee them turn about, remain ſtill, and ſometimes expire; and the larger kinds of them I as plainly perceive running along, as we do mice with the naked eye. Nay, I ſee ſome of them open their mouths, and move the organs or parts within them; and I have diſcovered hairs at the mouths of ſome of theſe ſpecies, though they were ſome thouſand degrees leſs than a grain of ſand.'

"This paſſage reſpects the ſize of animalcules, which the author repreſents by compariſon with the known ſize of a grain of ſand; other minute objects which he frequently deſcribes, are, the veſſels in the bodies of inſects, the threads of ſpiders, the filaments or threads of wool, the fibres compoſing the fleſh of animals, and the like. All theſe he conſiders as of a cylindrical form, that is to ſay, if hollow, like a round pipe, and, if ſolid, like a round ſtick, wire, or rope; and he conveys to his readers an idea of their minuteneſs, by comparing them with the known ſize of a ſingle hair. The method uſed by him in aſcertaining this proportion he deſcribes as follows: 'In examining the inteſtines of flies and other inſects by the microſcope, I have diſcovered veſſels conveying the blood and juices, the ſmalleſt ramifications or branches whereof appeared to me more than two hundred thouſand times leſs than a hair of my beard. And I will explain how I compute this proportion, which to many may appear wonderful. I have a plate of copper, with many lines engraven on it, and divided into a number of ſmall equal parts. I then carefully obſerve how many of theſe parts one hair taken from my beard, and ſeen through the microſcope, appears to cover. Suppoſing that the diameter of this hair, when magnified, appears equal to fifty of thoſe parts, then with the point of a needle I trace on the copper a line of the ſame ſize by the naked eye as is equal to one of thoſe ſmall veins or veſſels, in a fly, ſeen through the microſcope; and I find that nine of thoſe ſmall lines ſo traced with a needle, when placed cloſe together, are a fiftieth part of the diameter of the hair. If then 450 diameters of thoſe ſmall veins which I moſt plainly ſee in a fly are no more than equal to the diameter of one hair taken from my beard, it follows, by the rules of arithmetic, that one of ſuch hairs is more than 200,000 times larger than thoſe very ſmall blood-veſſels in a fly.'

"Mr.

"Mr. Leeuwenhoek here conſiders the hair to be round, as well as the ſmall veſſels he alludes to, and, ſuppoſing each of theſe to be cut through or acroſs the middle, the ſection would exhibit a circle. Now, the areas of circles being in proportion to the ſquares of their diameters, the author's propoſition is mathematically demonſtrated thus: $450 \times 450 = 202,500$."

Of the WEEVIL *or* CORN-BEETLE; *wherein the common opinion that this inſect is bred in corn ſpontaneouſly, is ſhewn to be erroneous; the true nature of its generation explained, with the means to preſerve corn from its infection.*

"I have heard it ſtrongly argued, that the weevil or corn-beetle, (which is a very noxious inſect, well known to the corn-dealers and bakers,) is produced by what is called equivocal or ſpontaneous generation, that is to ſay, from inanimate ſubſtances without any parent. The principal reaſons alleged in ſupport of this opinion are, that we often find this inſect in a new granary, where never wheat was kept before; and, therefore, it is deemed a neceſſary concluſion, that ſuch weevils are not propagated by the ordinary courſe of generation. Again it is ſaid, that we may open many grains of wheat, which are ſound and uninjured, ſo that no mark of perforation or hole ſhall be diſcernible on the outſide, yet within theſe grains ſhall be found perfectly-formed and living weevils.

"The anſwer which I have given to theſe arguments has been, that theſe animals may, by ourſelves, be removed from one granary to another without our knowledge: for ſuppoſing the perſon employed to remove corn, to have come out of a granary, or barn, infeſted with weevils, he may eaſily carry ſome grains of corn containing them, or ſome of the inſects themſelves, ſticking about his clothes, or in his ſhoes, and thus remove them into a granary where none had ever been. Beſides, the ſhip, waggon, or cart, employed to carry corn, may be infected with weevils, by having carried grain in which they abound, and thus from a few of theſe inſects, multitudes may be produced by the ordinary courſe of generation.

"But, in order fully to inveſtigate the truth of this, I deſired the perſons who had argued this matter with me, to bring me the firſt weevils they themſelves ſhould find, (it being then the winter ſeaſon;) and on the 13th of March I received ſome grains of wheat (many of which had the inſides eaten away) mixed with weevils.

"I took three glaſſes, in each of which I put ſix, eight, or nine, weevils, and eight, ten, or twelve, grains of wheat, which wheat I was the more aſſured could not be infected, becauſe it had been kept for ſeveral months, cloſely covered up, in my ſtudy. In a fourth glaſs I put ſome weevils without any wheat; but this laſt mode of experiment I afterwards rejected, obſerving that in the ſpace of twelve days they all died. As to the other three glaſſes, the weather being cold, and obſerving the animals, for the moſt part, to lie motionleſs, I put them into a leather caſe, which I always carried about me. And I had no doubt, but I ſhould clearly prove to all, that the weevil proceeds from a maggot; for which reaſon I frequently examined theſe objects by the microſcope.

"I, at firſt, entertained an opinion, that the weevil, like the ſilk-worm's moth, and many other inſects, did not, while in that ſhape, take any food: but herein I found myſelf miſtaken, and obſerved that

that the weevil not only feeds upon wheat, but that it can excavate or ſcoop out the whole contents of every grain, and creep about in the inſide, being provided with a beak, or trunk of a great length, in proportion to the ſize of its body, at the extremity of which, are certain exceedingly ſmall organs, or inſtruments like teeth, and with theſe it can bore or pierce through the outward huſk or ſhell of the wheat, and thus open to itſelf a paſſage to devour the contents.

"At a fortnight's end, namely the 27th of March, I obſerved ſome of theſe weevils coupled together, and from this time I frequently inſpected them, but ſaw no appearance of any living creature being produced from them until the 10th of June, when I obſerved lying among the weevils and the wheat, two ſhort and thick little maggots, one of them about the ſize of a large grain of ſand, and the other about one fourth part larger: ſeeing this, I opened one of the glaſſes in which I had encloſed ſix weevils, and examined the different grains of wheat that had been put in with them, and found two of them to be entirely hollow and empty; from another of the grains, which by the external appearance was the leaſt eaten or conſumed, but had many ſmall perforations or little holes not diſcernible by the naked eye, I drew out a perfectly-formed weevil, which was of a yellow colour: whereas thoſe which were at firſt brought to me, and had been ſhut up in the glaſs for three months, were of a deep red red, almoſt approaching to black.

"In another grain of the wheat I found a weevil, of a very pale or white colour, with its claws, horns, and beak, or trunk, lying cloſe to its body, in exact order, as we ſee the wings and legs of a ſilk-worm's chryſalis or aurelia, when it is almoſt arrived at the ſtate of a flying inſect, only with this difference, that the unformed weevil is not incloſed in a ſhell or caſe, like the aurelia of a ſilk-worm. In other grains of the wheat I found maggots of different ſizes; and from one grain I took out a perfectly formed weevil, whoſe white colour was changing to a red, and which was continually in motion.

"Examining the other glaſſes, I found ſome of the grains of wheat perforated with little holes, and others half eaten. Some of the weevils which had been ſhut up in theſe glaſſes I opened, and in one of the females I found five white eggs, which I conceived to be of their full ſize: in others I obſerved eggs, ſome of which were arrived to maturity, and others gradually leſs and leſs.

"Hence I concluded, that whereas the ſilk-worm's moth, living only a few days, in that time lays a multitude of eggs and then dies; on the contrary, the weevil, which every day produces but few eggs, is a long-lived animal, and by this means may be as prolific as ſilk-worms or other inſects: for the weevils which I am now treating of were all alive the preceding ſummer.

"As to the two maggots which I at firſt found in the glaſs among the wheat, I had no doubt that they had fallen out of the grains wherein they had been firſt depoſited, by reaſon that thoſe grains had been rather too much eaten away before the eggs were laid in them, and the holes which had been made in them rather too large; and, as all creatures, however minute, are endowed with moſt admirable faculties and powers to anſwer the ends of their creation, I think it very probable that the large trunk or beak with which this inſect is provided, (furniſhed with teeth or pincers, which open and ſhut in exact correſpondence with each other,) is given to it of ſuch a length

a length that it may be enabled to bore a ſmall deep hole in every grain of wheat, and therein depoſit an egg, otherwiſe the maggots breeding from theſe eggs would never grow to maturity: for if a weevil were to lay its egg on the outſide of a grain, and a maggot ſhould be hatched from it, ſuch a maggot could not poſſibly pierce the huſk of the wheat. Again, were a weevil to lay more than one egg in one grain, and all theſe eggs produced maggots, they would hinder each other's growth, for want of having ſufficient nouriſhment, inaſmuch as one grain is not more than ſufficient to nouriſh one maggot, and ſo to produce one weevil.

"I obſerved, in opening one grain in which a ſmall hole had been made, and out of which I took one ſingle egg, that round above that part where the egg was placed, the mealy ſubſtance of the wheat had been looſened or reduced to powder, from whence I concluded that the parent weevil, before it laid the egg, had, by means of its trunk, ſeparated the particles of meal in that part, both to make a ſoft place for the egg to lie in; and alſo, that, when the minute maggot ſhould creep out, it might find this ſoft and looſened meal prepared for its firſt feeding on.

"Some of theſe maggots I placed in glaſſes by themſelves, and obſerved them gradually to aſſume the form of weevils, the beak, horns, and claws, appearing by degrees, and the colour alſo changing from a white to a yellow, and then to the red colour of the weevil.

"As I had obſerved, that none of theſe inſects which were kept in glaſſes together with grains of wheat ever depoſited their eggs on the glaſs, I put three females into a glaſs by themſelves, and in the ſpace of twenty-four hours they laid four eggs. In the ſpace of ſeven days theſe eggs produced the kind of maggots before mentioned, which, when firſt hatched, were not larger than a grain of ſand. This maggot was in continual motion, but, when a little at reſt, it contracted its body together; and, when it attained to its full ſize, the ſhape remained the ſame until the time approached for its being changed into a weevil. Theſe maggots have very little ſtrength to move from place to place, ſo that it ſeems deſigned by nature, that they ſhould be fed no where but in grains of corn: for, if a weevil were to depoſit its egg in any place except in the inſide of a grain, it would in my opinion be impoſſible for the maggot thence produced to procure any nouriſhment and become a perfect weevil.

"Theſe things conſidered, we may be fully ſatisfied reſpecting the reaſon, why in corn, which is frequently moved and ſhifted, the weevil can encreaſe but little: for, ſuppoſing one of theſe inſects to have pierced and prepared two or three grains ready to depoſit its eggs, and ſoon afterwards the corn is moved or ſpread about, the animal, when it is ready to lay an egg, finding no grain prepared to receive it, muſt leave ſuch an egg on the outſide of the corn, where the young maggot, when hatched, will be in the ſame ſituation as ſeed ſown in barren land; and conſequently muſt periſh. But, if ſuch corn is undiſturbed, the weevil may multiply in a great degree, by depoſiting its eggs in the grains fitly prepared for them, and which may be conſidered as ſo many neſts for the reception of the young. Again, the long life of this inſect cauſes it to multiply exceedingly, for the weevils which I received in the month of March (the youngeſt of which was undoubtedly a year old) were alive and vigorous in June following; and who can tell how long the natural life of this inſect may be?

"I truſt

"I truſt that theſe obſervations will prove that weevils cannot be produced otherwiſe than by propagation, that is to ſay, by copulating and laying eggs, from which eggs, maggots proceed; and finally thoſe maggots are changed into weevils. But whether the vulgar will be hereby convinced of the error of their opinion in this reſpect, I much doubt, being continually peſtered with their objections to what I have advanced. It is, however, with me, a moſt certain truth, that what I have demonſtrated reſpecting the weevil, namely, 'that it cannot be produced otherwiſe than by generation, does alſo hold good with regard to all creatures endued with life and motion.' And, although this is a very minute animal, yet its ſpecies muſt have been continued in the way I have laid down, from its firſt being formed at the creation: and were it otherwiſe, namely, that from inanimate matter, ſuch as ſtones, wood, earth, plants, or ſeeds, this or any other animal ſhould be produced, that would be a departure from the general courſe of nature; and ſuch formation, or new creation, muſt be continually derived from the ſupreme almighty Creator.

"Probably what I here advance may appear ſtrange to ſome, and they may perhaps wiſh me to enquire into the propagation of other minute animals; but for the preſent, I leave the proſecution of theſe matters to thoſe who may chooſe to beſtow as much labour thereon as I have done in this examination of the weevil, aſſuring them that my obſervations are the reſult of more than four months application to the ſubject."

[*To be continued occaſionally*]

ACCOUNT OF DR. WILLIAM HERSCHEL.

DR. William Herſchel is a native of Hanover, and was born November 15, 1738. He was the ſecond of four ſons, all of whom were brought up to their father's profeſſion, which was that of a muſician. In addition to theſe, Mr. Herſchel, ſenior, had two daughters; and therefore, burdened with ſo large a family, and in a poor country too, it is not at all a matter of wonder that the education which he beſtowed on his children was but ſcanty. Finding, however, in William a lively and inquiſitive genius, beyond what appeared in the other ſons, he gave him the advantage of a French maſter, under whom he made a rapid progreſs in the attainment of that language. Luckily, the tutor had a metaphyſical head, and ſo fond was he of his favourite ſtudy, as well as thoſe branches of ſcience which are connected with it, that he was deſirous of making his pupil acquainted therewith. From this worthy man, young Herſchel gained a tolerable knowledge of logic, ethics, and metaphyſics; and his attainments therein excited in his mind a ſtrong and inſatiable thirſt for learning, with the commendable reſolution of exerting himſelf to the utmoſt to improve his ſtock of intellectual treaſures. Theſe, indeed, were all his inheritance, except a muſical inſtrument, and ſome manuſcript muſic. With this ſtore, unpromiſing as it was, our adventurer bade adieu to his native country while the flames of war were ſpreading around it, and arrived in London in the year 1759. Here he was loſt in the crowd of candidates for employment; and, we may well ſuppoſe that his ſituation in a ſtrange country, without friends, and in but indifferent circumſtances, muſt have been both painful and irkſome. Mr. Herſchel had

had not only a ſteady but a virtuous mind. Hereby he was enabled not only to bear up with fortitude againſt diſappointments, but to perſevere with alacrity in improving himſelf in an occupation, which hardly ſeemed to promiſe him a comfortable ſubſiſtence.

Finding but little proſpect of ſucceeding to his wiſh in the metropolis, he prudently reſolved upon going into the country; where, muſical profeſſors being few, the chance of ſucceſs muſt be the greater. After viſiting different places in the north of England, his good fortune brought him to Halifax, where, an organiſt being wanted, his merits were tried, and he procured the appointment. Here he alſo taught muſic with approbation and profit. The love of learning ſtill prevailed, and at this place he devoted his ſpare hours to the ſtudy of the languages, beginning with the Italian, on account of its intimate connection with his profeſſion. From the Italian he proceeded to the Latin, in which he made an eminent progreſs. He then attempted the Greek, but after a little application he abandoned the ſtudy of this language, conſidering it as too dry and abſtracted for his purpoſe.

In theſe purſuits Mr. Herſchel was entirely ſelf-taught; and he holds out, in conſequence, an excellent and pertinent example to thoſe young perſons whoſe education has been circumſcribed within common limits, through the penury or narrow-mindedneſs of of their friends.

A determined heart, and perſevering application, we ſee, from this inſtance, will overcome obſtacles that are apparently inſurmountable.

But it was not to the dead and living languages only that Mr. Herſchel bent his ardent and reſolute mind. He attempted to gain a knowledge of the moſt abſtruſe ſciences. His firſt effort was to make himſelf maſter of the theory of harmonies; and it is obſervable, that the book which he made choice of for this purpoſe, was no other than the profound and intricate treatiſe of the learned Dr. Smith upon that ſubject. He got through this work, however, without any aſſiſtance; and, ſo great was the pleaſure which he derived from it, that he reſolved upon ſtudying the other branches of mathematical learning. He began with algebra, which he ſoon maſtered; thence he proceeded to Euclid, and ſo on to fluxions. The ground-work being thus laid, the ſtudy of the other ſciences became eaſy.

His ſituation at Halifax was favourable to his grammatical and mathematical purſuits; and it is well, that he thus laid in a thorough ſtock of ſound knowledge in what may be called his retirement. In 1766 he exchanged this place for one of a very different deſcription, being elected organiſt to the octagon chapel at Bath. Here he entered at once upon a great round of profeſſional buſineſs, performing at the rooms, theatre, oratorios, and public and private concerts, beſides having a great number of pupils. In ſuch a hurry of employment, and in the immediate circle of luxury and amuſement, very few men of Mr. Herſchel's profeſſion and age would have found time to purſue ſtudies ſeemingly ſo unprofitable and unintereſting as mathematics.

So far, however, from relaxing in his ſcientific ſtudies, he purſued them with increaſing ardour, and after a day of hard labour, he commonly retired at night to his mathematical books, and ſpent

many hours in an unwearied attention to the moſt abſtruſe queſtions in geometry and fluxions.

In the Ladies' Diary, for 1780, appeared an elegant an profound anſwer by him to a very difficult prize-queſtion, reſpecting the vibrations of a muſical chord loaded in the middle with a ſmall weight.

About this time his ſtudies were chiefly directed to optics and aſtronomy. The pleaſure which he had experienced from viewing the heavens through a two-feet Gregorian teleſcope, which he borrowed at Bath, made him deſirous of poſſeſſing a complete ſet of aſtronomical inſtruments. His firſt object was to get a larger teleſcope; and, being ignorant of the price at which ſuch inſtruments are uſually charged, he deſired a friend in London to buy one for him. This gentleman, ſurpriſed at the ſum demanded for the teleſcope, declined purchaſing it till he had informed Mr. Herſchel of the circumſtance. Our aſtronomer's aſtoniſhment was equal to that of his friends; but, inſtead of dropping his purſuit, he formed what many would have regarded as a moſt romantic reſolution, that of making a teleſcope for himſelf. He did not content himſelf with a ſpeculative idea, but, from the ſcanty inſtructions he could gather out of optical treatiſes, actually ſet about this arduous undertaking. Diſappointment ſucceeded diſappointment; but all this only ſerved to act as a ſtimulus to his ardent mind, and at length his perſeverance was crowned with ſucceſs, and, in 1774, he enjoyed the exquiſite ſatisfaction of beholding the heavens through a five-feet Newtonian reflector of his own workmanſhip. Our modern Galileo did not reſt at this attainment, great as it was, but, with a laudable ambition, ſet about making inſtruments of a greater magnitude than had hitherto been known. After conſtructing thoſe of ſeven, and even ten feet, he thought of forming one not leſs than double the latter ſize. So great was his patience, ſo determined his perſeverance, that in perfecting the parabolical figure of a ſeven-feet teleſcope, he did not make leſs than two hundred ſpecula before he obtained one that would bear any power that was applied to it.

While he was thus laboriouſly employed in his mathematical purſuits, he did not neglect the immediate duties of his profeſſion. Yet ſo much did his new occupation engage his mind, that he has frequently ſtolen from the theatre or the concert-room to look at the ſtars, and then return again in time to bear his part among the muſical performers. This conſtancy to Urania was at length moſt bountifully rewarded, by the diſcovery of a new planet in our ſyſtem, to which he gave the name of *Georgium Sidus*, but which foreign aſtronomers have generally termed *Herſchel*.

This important diſcovery was made in the night of the 13th of March, 1781. It was by no means a mere accidental circumſtance which favoured our aſtronomer with the view of this planet; but the reſult of a regular, patient, and ſcientific, chain of obſervations. When he firſt ſaw it, he was not quite certain that it belonged to our ſyſtem; but a cloſer enquiry enabled him to aſcertain with exactneſs its planetary diſk, as well as its motion.

This diſcovery was communicated the ſame year to the royal ſociety; and in conſequence of it, Mr. Herſchel was unanimouſly elected a member, and had the annual gold medal beſtowed upon him for his ſervice to the intereſts of ſcience.

The year following his majeſty took him under his immediate patronage,

tronage, and conſtituted him his aſtronomer, with a handſome penſion. On this he quitted Bath and his muſical inſtruments; and went to live at Slough near Windſor, at a houſe appointed for him by his royal maſter.

Here he was enabled to carry on his projects with vigour, and thoſe which had hitherto failed of ſucceſs were now brought to perfection. While at Bath, he had formed the bold ſcheme of conſtructing a teleſcope of thirty feet, and actually made ſeveral trials to carry his object into effect. But, though he failed there, ſince his reſidence at Windſor he has far exceeded this deſign, and completed an inſtrument of no leſs than forty! The irregularities in the ſpeculum, and the impoſſibility of rendering the parts of ſo enormous an inſtrument as this mathematically exact, have hitherto prevented his being able to make any actual obervations with it. It is a vulgar error, that the diſcoveries of Dr. Herſchel have been occaſioned by the enormous magnifying power of his teleſcope; the fact is, that no ſuch large power is neceſſary, or uſeful; and that all Dr. Herſchel's diſcoveries have been made with reflectors of from ten to twenty feet, and with powers of from ſixty to three hundred. His diſcoveries are to be aſcribed to his laudable perſeverance, and not to the ſize of his great teleſcope, which is rather an object of curioſity than of utility.

In 1783 he diſcovered a volcanic mountain in the moon, and in 1787 made farther obſervations upon that planet, and found two others therein, which emitted fire from their ſummits. In proſecuting his enquiries reſpecting his own planet, (if we may be allowed ſo to expreſs ourſelves,) he has diſcovered it to be ſurrounded with rings, and to have ſix ſatellites.

For all theſe important additions to the ſtock of national knowledge, our aſtronomer had the honour of receiving from the univerſity of Oxford the degree of a Doctor of Laws; which is the more creditable, as that learned body is very ſparing of its academic honours upon perſons who have not been educated within its walls.

Dr. Herſchel has been a regular contributor to the Philoſophical Tranſactions ever ſince his firſt communication in 1781, reſpecting his diſcovery of the new planet. Some of his papers are extremely curious; and he has hazarded a few bold conjectures reſpecting the ſun, and other planetary bodies, which would hardly have been received from a leſs accurate obſerver.

In his aſtronomical purſuits the doctor is materially aſſiſted by his ſiſter, Miſs Caroline Herſchel, who has diſtinguiſhed herſelf greatly by her application to this ſublime ſtudy, and has communicated to the Royal Society ſome very ingenious reports of obſervations made by her upon the ſtarry orbs.

Dr. Herſchel is a man of unaſſuming manners, a free, communicative, and pleaſant, companion; and enjoys that vigour of conſtitution which is ſo eſſential to an aſtronomical obſerver in a climate like that of England. It may be hoped, that his name will endure as long as the planetary ſyſtem, to illuſtrate which he has devoted his life.

DESCRIPTION OF HAMBURGH.

THIS city, which particular circumſtances have of late brought forward on the political canvas, is one of the moſt conſiderable in the northern part of Europe. There is not an inſtance of one, whoſe

whole commerce and population have increaſed ſo much within the ſpace of ten years. According to the official report, it has 130,000 inhabitants. For a long time the population of Copenhagen has been compared to that of Hamburgh; but we now have certain knowledge, that the firſt of theſe towns has not more than 83,000 inhabitants.

Hamburgh has become the depot of European commerce ſince the decline of Amſterdam; it is well known, that a great number of merchants have reſorted thither from different parts of Europe, taking their property along with them. To judge of the extent of its commercial concerns, we have nothing to do but to acquaint ourſelves with the quantity of imports in the courſe of the laſt year. In the article of coffee alone, there were not leſs than forty-ſix millions of pounds, almoſt the whole of which came from Engliſh and American ports, viz. from Liverpool 10,673,000; from London 4,568,000; from New York 4,182,000; from Philadelphia 5,773,000; from Baltimore 8,965,000; and what is remarkable, from the iſland of St. Thomas 4,162,000 pounds; the importation of ſugar amounted to 98,000,000 of pounds, which alſo came chiefly from the Engliſh and the Americans. The number of veſſels which entered the port of Hamburgh was 2148; of which three only came from Cadiz; 117 from Amſterdam; 198 from London; 80 from Newcaſtle; 51 from Bourdeaux; 71 from Ruſſia; two from China; and 149 from the United States of America.

Hamburgh diſpatched ſeventeen veſſels in the whale fiſhery, and it turned out remarkably well. To make the matter clearer by compariſon, we ſhall add, that in the courſe of the ſame year only 1901 veſſels arrived in the port of Amſterdam; of which 279 came from Bremen, two from Cadiz, fifteen from Bourdeaux, forty-two from London, 711 from Hamburgh, &c.

So extenſive a trade muſt neceſſarily have brought about a remarkable change in the manners, cuſtoms, and taſte, of the people of Hamburgh. The mode of living, for example, is very different from what it was ten years ago. You find in almoſt every quarter of the town French *reſtaurateurs*, the greater part of them gentlemen under the old regimen, men of principle who have preferred this manner of earning a ſubſiſtence to others leſs honeſt. At theſe houſes you are ſerved exactly in the French manner, and by French ſervants; and ſome of them are diſtinguiſhed at the ſame time by a cleanlineſs truly Engliſh.

The entertainments at Hamburgh are ſumptuous; and the tables are ſpread with the choiceſt viands. On the other hand, in private their family dinners are prepared with a frugality becoming men who are ſkilled in calculation. What renders a reſidence at Hamburgh moſt agreeable is, that every one may live there as he pleaſes. The Engliſhman, for inſtance, will find plenty of private houſes, where they live in the ſtyle of his country and ſpeak the language; the ſame with the Frenchman, and moſt other nations. In this city there are not only inns, according to the Engliſh faſhion, but even chop-houſes (a ſort of Engliſh ale-houſe, ſays the foreign writer of this article).

Robberies are very rare; and this is certainly owing to the general competency and good morals of the place. Very ſeldom does one hear of a murder. There are but few quarrels in the ſtreets,

ſtreets, and it is not common to meet perſons in a ſtate of intoxication. There is, perhaps, no town where it is ſo much the cuſtom to make excurſions on Sundays into the country. Every family, in the leaſt degree opulent, has a country-houſe. They commonly leave the city on a Saturday afternoon, and return on Monday morning; and they either take a party of friends with them, or receive their viſits at their villas on Sunday. The inferior claſſes on this day fill the taverns and public-houſes, which are very numerous; at ſome they dance, at others they play at ſkittles; and at all theſe, a pipe is a favourite recreation.

It is ſurpriſing, ſince Hamburgh is ſo greatly increaſed, that they have not yet reſorted to the accommodation of hackney-coaches; there is not even a carriage, in the nature of an Engliſh ſtage-coach, to carry perſons backward and forward at certain hours between Hamburgh and Altona, Wandſbeck, &c. though ſuch an eſtabliſhment would certainly anſwer well to thoſe who might have ſufficient enterpriſe to ſet it on foot.

At Hamburgh we ſee perpetually new buildings, though building is not in general the rage of the Hamburghers. They build becauſe they find it neceſſary. The price of houſes has increaſed within a few years, 50, nay 100 per cent. At preſent they are no longer on the riſe, the political horizon having become too cloudy, and diſcontents having increaſed, with the intereſt of money, to an unprecedented degree.

The gates of the city are ſhut very early; a circumſtance much complained of by ſtrangers and people of fortune. It is, however, wrong to cenſure this prudent regulation of the ſenate. It is compenſated by conſiderable advantages, and there are few great cities in which the inconveniencies and reſtraints are not much greater.

The Exchange is a ſorry building, and far too ſmall. In looking at it, one is reminded of the anſwer of the Chancellor Bacon to Queen Elizabeth, who, expreſſing to him her wonder at the ſmallneſs of his houſe, was told, that the houſe was not too little for him, but her majeſty had made him too great for his houſe. Thus has the trade of Hamburgh become too extenſive for its exchange.

All muſt agree, that the country on the bŏrders of the Elbe affords a moſt enchanting view. The houſes ſituated on its banks are built, ſome in a very ſuperb, others in a very neat, ſtyle. They are furniſhed in ſuch a manner as one might expect from rich merchants, men, too, familiarized with Engliſh manners, whoſe commerce, conveniencies of life, and luxuries, are ſuperior to thoſe of all other nations. The public gardens, which ſurround the city, are in general kept in good order, particularly that of Harveſtehude on the Alſter, about a league from Hamburgh. It not only affords a picturesque ſcenery, beautiful walks, and ſhady ſeats, but it has the farther attraction, that you may go to it by water. It is accordingly much frequented in the ſummer ſeaſon.

It is rare, perhaps ſingular, to find three large towns ſo cloſe to each other as Hamburgh, Altona, and Wandſbeck; they are not merely contiguous, but actually touch each other. Altona is a ſpacious town, carries on a conſiderable commerce, has a theatre, &c. Many diſtinguiſhed characters, particularly *literati*, have choſen that city for their abode; and ſeveral perſons reſide there who have acted a very conſpicuous part in the French revolution.

EFFECTS

EFFECTS OF CLIMATE ON THE ENGLISH CHARACTER.

A DISTINGUISHABLE characteriſtic of the climate of this iſland is, its very great variableneſs, and a conſiderable degree of humidity. Winds, from whatever quarter they blow, bring with them rain; and in the faireſt days it is very ſeldom that the air is not loaded with vapours, more or leſs perceptible. We are every where enveloped in a fog; and, of all the countries I have ever travelled in, never did I find logs ſo frequent, or ſo thick and heavy. This is ſurely the land of miſts and vapours; and, were it not for high winds which every now and then ſweep and dry the earth, it would be conſtantly damp and wet; for it is eaſy to imagine that the rays of the ſun, having to force a paſſage conſtantly through ſuch a denſe atmoſphere, muſt be greatly weakened in power and activity. I will not ſay, with the Marquis de Caraccioli, that the brighteſt ſunſhine in England is not equal to the brilliancy of a moonlight night in Naples: it is, however, very certain, that the ſun appears very ſeldom in his full ſplendour: for, when you ſuppoſe you are going to enjoy the comfort of his beams, he is, in a moment after, hid from you by impenetrable clouds; and, in general, for whatever cauſe I know not, except it be a peculiar predilection for the immortal Newton and his diſciples, nature appears to be here more laviſh of brilliant nights than fair days. Young, ſo harſhly apoſtrophized by Le Mierre, in his Faſtes; this Young, I ſay, "the nightwalker, eager to ſee the ſetting ſun," conſidering the partial diſtribution of day and night in his country, had more reaſon for hating day-light than is generally believed.

I am ſenſible that theſe remarks apply rather to London than other parts of England. The immenſe conſumption of ſea-coal increaſes the quantity of fog, thickens it, and renders it of longer duration, and, moreover, cauſes theſe miſts to be more gloomy and ſuffocating. I am never ſo much incommoded as at the moment I riſe from my bed. To breathe the freſh air of the morning is a ſort of luxury which is not to be enjoyed in this noble large city; it is a poetical fancy, conceived, like other felicities of the Golden Age, in the brain of the writers of eclogues. I am of opinion, that it is from being deprived of this enjoyment, that we may account for the habit ſo common with the Engliſh, of riſing later than we are accuſtomed to do. They will endeavour to perſuade you here, that theſe exhalations being impregnated with nitre and ſulphur, are ſo far from being prejudicial, that they neutralize the fogs, purify the air, and preſerve it in a proper degree of temperature. This may poſſibly be, but it is very certain they render the atmoſphere thicker, and more dark and heavy, and perceptibly charge the air you breathe with a very diſagreeable black ſmoke.

As a proof that the climate throughout England does not greatly differ from that of London, except in the circumſtance juſt before mentioned, we may inſtance the nature of its produce. By an excellent mode of cultivation, the land is made to produce the beſt of corn, and in ſuch abundant crops that one year's harveſt is ſufficient for the conſumption of fourteen months; the paſturage is rich; potatoes are ſuperior to any grown in France, and hops are very good; but grapes, and all the fruits and pulſe which owe their perfection,

to

to the genial influence of a warm ſun, are not to be had; it is only by mere dint of art that they are raiſed; and their vegetation being factitious, they have rather the reſemblance than the reality of what they are called. It is very eaſy to diſcover the great labour and painful induſtry which luxury employs in effecting this impoſition upon itſelf; it is Vulcan endeavouring to get the better of Apollo, and it muſt be confeſſed, the gods themſelves are apt to fail whenever they attempt any thing out of their province.

A ſky in which no cloud is to be ſeen, is ſo great a novelty, that it takes place of all other news; and it is impoſſible for a foreigner not to remark the joyful congratulations which he hears on all ſides, when the ſun condeſcends to ſhew himſelf ever ſo little—"A very fine day—very fine weather, indeed!"

Is it not from the uncommonneſs of fine weather in England that the country has produced ſo many good poets and ſo few painters of excellence? Nature is rarely ſeen there in her beſt dreſs. How much more ſenſible and lively then muſt the imagination prove? Nature, in the perfection of her charms, is a miſtreſs only ſeen in this iſland for a ſhort time, and, as it were, in ſecret? in other countries, as in Switzerland, Italy, and in the ſouthern parts of France, ſhe is a wife, and her beauty is leſs thought of and admired. Lively impreſſions may form a great poet, but they will not make great painters. Becauſe it is not enough that the painter is ſtrongly charmed, but he muſt copy nature with the pencil in his hand; he requires the advantage of time for obſervation; he muſt conſider his model at leiſure; he muſt have ſerene weather to view it in, and a perfect daylight to ſee clearly every object of his imitation; it is only under a clear ſky that colours appear in their full truth and luſtre.

If you were told of an iſland in a certain latitude, in which the winds were extremely variable, the climate rather temperate, but the air almoſt continually loaded with fogs and watery miſts; if you were farther informed, that the inhabitants of this iſland, after having, by their labour and induſtry, acquired a competency, indulged in habits which induced a neceſſity for an abundant diet; that, indeed, they conſumed little bread, an aliment which is eaſily changed to chyle, but a great deal of fleſh, much butter, and large quantities of potatoes, and that their conſtant beverage was a ſtrong beer of a peculiar fattening quality, and in which a little opium was infuſed; would you not be inclined to pronounce, that with ſuch a regimen, in ſuch a climate, the men muſt, in general, have much bodily ſubſtance, and materials for life and reproduction, and, in many reſpects, great ſtrength and vigour for action, and the ſupport of labour and hardſhips; but that for the moſt part their fibres muſt be ſoft and flaccid, and conſequently without elaſticity and feeling; and that, with a few exceptions, their animal ſpirits were dull, and circulated but ſlowly? Well, now, what you would preſume, I think I have ſeen.

The Engliſh caricatures always picture a Frenchman lean and half ſtarved; and it cannot be denied but that the Engliſh, in general, have the appearance of being far better fed. This does not altogether proceed from their eating more, but from the difference of the aliments which the one and the other nation accuſtoms itſelf to. There more groſs and elementary matter in the Engliſh diet; ours is at the ſame time leſs heavy, and of a more bracing quality, conſequently

quently it muſt more eaſily cheriſh the warmth of the vital principle, and accelerate the circulation of the blood. It is impoſſible but from exceſs of the former regimen there muſt be produced in the moral character a greater degree of heavineſs, indolence, and melancholy; and, by abuſe of the latter, much gaiety, folly, and precipitance.

Is not the diſeaſe to which the Engliſh are particularly ſubject, and which has paſſed to other nations by the name they have given it, *the ſpleen*, a plain proof of the twofold effects of their diet and climate? Do but aſk our friend Montaigne, whether conſtantly to look up to a ſky obſcured with clouds and vapour, will not diſpoſe the mind to gloomy thoughts, and melancholy ideas?

As a relief from the anxiety and languor, the natural conſequence of the mode of living I have deſcribed, the Engliſh are under the neceſſity of having recourſe to various means, which are not without many inconveniences. They drink a great deal of tea; this certainly helps digeſtion, and diſſolves the humours by helping them in their paſſage, but it increaſes perſpiration, and brings on relaxations of the nervous ſyſtem. Another means made uſe of, ſtill more dangerous, is the immoderate quantities of the ſtrongeſt wines, and the moſt fiery ſpirits. Gin and brandy are the regale of the lower ſort of people, and the women of this claſs are not leſs addicted to drinking theſe liquors than the men.

From theſe meteorological and dietetic remarks, I wiſh to draw a concluſion which, in my opinion, will fully explain why the characteriſtic of the Engliſh is that of method and ſtedineſs, with leſs reſtleſſneſs and more ſerioufneſs than we appear to poſſeſs; an activity leſs lively than ours, but more ſedate; a degree of mirth leſs natural than with us, but not ſo eaſily excited, nor ſo violent in its paroxyſms; a temper of mind leſs volatile, but more ſolid and profound; feelings leſs diſcoverable and active, but ſtronger and more juſt. If an Engliſhman begins to act, he does it after reflection, and a full examination. His moments of mirth and jollity convey the idea of that ſort of delirium attendant on the attacks of a feveriſh diſorder. Who is there in France without wit and humour? I will freely pronounce that the very fools and idiots are not without it. But here, though the people in general think properly and juſtly on all occaſions, you find but few who are poſſeſſed of wit, except ſome men of talents, who, by an aſſiduous attention, have opened the ſtores of ingenuity. Wit is not here a paraſite plant, the ſpontaneous production of the land; it ſprings up only where it has been carefully planted in a ſoil properly prepared to receive it. There is, if you will permit me the remark, leſs wit and humour in England than in France; but what is found here is more original, and better digeſted; there are fewer falſe pretenſions to a refined underſtanding here; it is here, too, leſs common to apply it to an improper uſe; and it is not, as in ſome other places, a general received opinion, that wit can make up for all deficiencies, and that, with it, decided opinions may be given on all matters without ſtudy or the leaſt previous acquaintance with the ſubject. *Meiſter's Letters.*

STATE OF THE POOR.

IT is much to be lamented, ſays Mr. Colquhoun, that in this metropolis the magiſtrates interfere very little in parochial relief, except when appeals are made to them in particular caſes, or when called

called upon to ſign orders of removal, which is generally done as a matter of courſe. Hence it is that the poor are left almoſt entirely to the management of the parochial officers for the time being, who frequently act under the influence of ignorance or caprice, or are irritated by the impudent importunity of the profligate gin-drinking poor. Theſe officers alſo, it is to be remembered, have private affairs which neceſſarily engage the chief part of their attention; and, are frequently no leſs incapable than unwilling to enter on thoſe inveſtigations which might enable them to make the proper diſcriminations: the modeſt and ſhamefaced poor are thus frequently ſhut out from relief, while the vociferous and idle ſucceed in obtaining pecuniary aſſiſtance, which is ſoon improvidently diſſipated.

The diſtreſs which is thus ſhewn to prevail, by no means ariſes from the want of competent funds:—the misfortune is, that from the nature of the preſent mode of management it is not poſſible to apply theſe funds beneficially for the proper relief of thoſe for whom they were intended. A much more moderate aſſeſſment, under a regular and proper management, would remove great part of the evil.—The expence of the claſs of perſons denominated caſual poor, who have no ſettlement in any pariſh in the metropolis, amounts to a large ſum annually.—In the united pariſhes of St. Giles's in the Fields, and St. George's, Bloomſbury, this expence amounted to 2000l. in the year 1796. It aroſe from the ſupport of about 1200 poor natives of Ireland, who, but for this aid, muſt have become vagrants. The ſhocking abuſe of the vagrant paſſes previous to the year 1792, produced the act of the 32d Geo. III. cap. 43, which requires that vagrants ſhould be firſt publicly whipt, or confined ſeven days in the houſe of correction, (females to be impriſoned only, and in no caſe whipped,) before they are paſſed, as directed by the act of the 17th Geo. c. 5. Hence it is, that ſo many who are either on the brink of vagrancy or have actually received alms, are permitted to remain a burthen on the pariſhes; the magiſtrates being loth to incur the charge of inhumanity, by ſtrictly following the letter of the act, in whipping or impriſoning poor miſerable wretches, whoſe indigence has rendered relief neceſſary.

In all the 146 pariſhes within and without the walls, including the bills of mortality, &c. it is not improbable that the caſual charity given in this way may amount to 10,000l. a year.

The looſe manner in which it is given, and the impoſſibility either of a proper diſcrimination, or of finding, in the diſtributing theſe reſources, that time for inveſtigation which might lead to the ſolid benefit of the pauper, by reſtoring him to a capacity of earning his own livelihood, makes it highly probable that inſtead of being uſeful, this large ſum is, perhaps, hurtful, to the major part of the poor who receive it. The trifle they receive, from being injudiciouſly given, and frequently to get rid of the clamour and importunity of the moſt profligate, is too often ſpent immediately in the gin-ſhop. No time can be afforded for an enquiry into the circumſtances of the family—no meaſures are purſued to redeem their apparel locked up in the pawnbrokers' ſhop, although a ſmall ſum would frequently recover the habiliments of a naked and ſtarving family—no queſtions are aſked reſpecting the means they employ to ſubſiſt themſelves by labour; and, no efforts are uſed to procure employment for thoſe who are willing to labour, but have not the means of obtaining work.

Hence it is that poverty, under ſuch circumſtances, contributes in no ſmall degree to the multiplication of crimes. The profligate, thus partly ſupported, too often reſort to pilfering purſuits to fill up the chaſm; and, habits of idleneſs being once obtained, labour ſoon becomes irkſome.

Why ſhould not the whole nation, but particularly the metropolis, be conſidered, ſo far at leaſt as regards the vagrant and caſual poor, as one family, and be placed under the review of certain perſons who might be conſidered as worthy of the truſt, and might devote their time aſſiduouſly to that object? Were ſuch an eſtabliſhment inſtituted, and ſupported in the firſt inſtance by a ſum from each pariſh, equal to the caſual relief they have each given on an average of the five preceding years, with power to employ this fund in eſtabliſhing houſes of induſtry, or work-rooms, in various parts of the metropolis, where the poor ſhould receive the whole of their earnings and a comfortable meal beſides:—it is highly probable, that, while the expence to the pariſhes would gradually diminiſh, beggary would be annihilated in the metropolis—the modeſt and deſerving poor would be diſcovered and relieved, while the idle and the profligate, who reſorted to begging as a trade, would be compelled to apply to honeſt labour for their ſubſiſtence.

This is a point in the political economy of the nation highly important, whether it relates to the cauſe of humanity or to the morals of the people, upon which all good governments are founded.—That ſuch an inſtitution is practicable is already proved from the partial experiments that have been made. That the advantages reſulting from it would be great beyond all calculation, is too obvious to require elucidation. No new buildings would be neceſſary for this purpoſe:—abundance of old houſes could be hired in different parts of the town at a moderate expence.

The ſyſtem which prevails in the metropolis, with reſpect to thoſe unfortunate individuals who are denominated the caſual poor, will be found, on minute enquiry, to be none of the leaſt conſiderable of the cauſes which lead to the corruption of morals, and to the multiplication of minor offences.

The number of perſons, who with their families find their way to the metropolis, from the moſt remote quarters of Great Britain and Ireland, is inconceivable. In hopes of finding employment, they incur an immediate and conſtant expence for lodging and ſubſiſtence, until at length their little all is in the pawnbrokers' ſhops, or ſold to raiſe money for the neceſſaries of life. If they have been virtuouſly brought up in the country, deſpondency ſeizes upon their minds in conſequence of the diſappointments and hardſhips their adventurous or incautious conduct has doomed them to ſuffer; which, as it applies to the moſt deſerving of this claſs, who will not ſteal, and are aſhamed to beg, often exceeds any thing that the human mind can conceive.

Their parochial ſettlements are either at a great diſtance, or perhaps they are without even this reſource. The expence of removing, as the law directs, is too ſerious a charge to be incurred by the pariſh where accident has fixed them. Under ſuch circumſtances their applications are too frequently treated with neglect and contumely by the parochial officers; and, from the diſappointment they thus experience, they are not ſeldom driven to deſpair. Willing to labour, but

but bereft of any channel or medium through which the means of ſubſiſtence might be procured, their diſtreſſes become exceedingly ſevere. It is aſſigned to no perſon to hear their mournful tale, who might be able to place them in a ſituation where they might gain a ſubſiſtence; and, under ſuch circumſtances, it is much to be feared, that not a few of them either actually periſh for want, or contract diſeaſes which ultimately terminate in premature death.

Such is frequently the ſituation of the more decent and virtuous claſs of the labouring people, who come to ſeek employment in the metropolis. The more profligate, who purſue the ſame courſe, have generally other reſources. Where honeſt labour is not to be procured, they connect themſelves with thoſe who live by petty or more atrocious offences, and contribute in no ſmall degree to the increaſe of the general phalanx of delinquents. The young female part of ſuch families too often become proſtitutes, while the males purſue acts of depredation upon the public, by availing themſelves of the various reſources which the defects in the police ſyſtem allow.

It is to be lamented, that in contemplating the maſs of indigence, which, in its various ramifications, produces diſtreſſes more extenſive and more poignant than, perhaps, in any other ſpot in the world (Paris excepted), its origin is to be traced in almoſt every rank of ſociety; and, though ſometimes the reſult of unavoidable misfortune, is perhaps more frequently generated by idleneſs, inattention to buſineſs, and indiſcretion. But, at all events, the tear of pity is due to the helpleſs and forlorn offſpring of the criminal—the indiſcreet or indolent, who become objects of compaſſion, not only as it relates to their immediate ſubſiſtence, but much more with reſpect to their future ſituations in life. It is in the progreſs to the adult ſtate, that the infants of parents, broken down by misfortunes, almoſt unavoidably learn, from the preſſure of extreme indigence, to reſort to devices which early corrupt their morals, and mar their future ſucceſs and utility in life. Under the influence of theſe ſad examples, and their neceſſary conſequences, do many females become proſtitutes, who, in other circumſtances might have been an ornament to their ſex; while the males, by contracting early in life habits that are pernicious, become, in many inſtances, no leſs noxious to ſociety. Familiarized in infancy to the pawnbroker's ſhop, and to other even leſs reputable means of obtaining temporary ſubſiſtence, they too ſoon become adepts in falſehood and deceit. Imperious neceſſity has given an early ſpring to their ingenuity. They are generally full of reſources, which in good purſuits might render them uſeful and valuable members of the community; but unhappily, their minds have acquired a wrong bias, and they are reared inſenſibly in the walks of vice, without knowing, in many inſtances, that they are at all engaged in ſuch purſuits.

In all theſe points of view, from indigence is to be traced the great origin and the progreſs of crimes.

The poor may be divided into five claſſes.—The firſt claſs comprehends what may be denominated the uſeful poor, who are able and willing to work—who have already been repreſented as the pillars of the ſtate, and who merit the utmoſt attention of all governments, with a direct and immediate view of preventing their poverty from deſcending unneceſſarily into indigence. As often as this evil is permitted to take place, the ſtate not only loſes an uſeful ſubject,

but the expence of his maintenance muſt be born by the public. The great art, therefore, in managing the affairs of the poor, is to eſtabliſh ſyſtems, whereby the poor man, verging upon indigence, may be propped up and kept in his ſtation. Whenever this can be effected, it is done upon an average at one-tenth of the expence, at moſt, that muſt be incurred by permitting a family to retrogade into a ſtate of indigence, where they muſt be wholly maintained by the public, and where their own exertions ceaſe, in a great meaſure, to be uſeful to the country.

The ſecond claſs comprehends the vagrant poor, who are able but not willing to work, or who cannot obtain employment in conſequence of their bad character. This claſs may be ſaid to have deſcended from poverty into beggary, in which ſtate they become objects of peculiar attention, ſince the ſtate ſuffers not only the loſs of their labour, but alſo of the money which they obtain by the preſent ill-judged mode of giving charity. Many of them, however, having become mendicants more from neceſſity than choice, deſerve commiſeration and attention; and nothing can promote, in a greater degree, the cauſe of humanity, and the real intereſt of the metropolis, than an eſtabliſhment for the employment of this claſs of indigent poor, who may be ſaid at preſent to be in a very deplorable ſtate, thoſe only excepted who make begging a profeſſion. It is only by a plan, ſuch as has been recommended, that the real indigent can be diſcovered from the vagrant, and in no other way is it poſſible to have that diſtinct and collected view of the whole claſs of beggars in the metropolis, or to provide the means of rendering their labour (where they are able to labour) productive to themſelves and the ſtate. And it may be further added with great truth, that in no other way is it poſſible to prevent the offspring of ſuch mendicants from becoming proſtitutes and thieves.

If, therefore, it is of importance to diminiſh crimes, and to obſtruct the progreſs of immorality, this part of the community ought to be the peculiar objects of a branch of the national police, where reſponſibility would ſecure an accurate execution of the ſyſtem. This meaſure ought to begin in the metropolis, as an experiment, and when fully matured might be extended with every advantage to the country.

The third claſs may be conſidered under the denomination of the indigent poor, who from want of employment, ſickneſs, loſſes, inſanity, or diſeaſe, are unable to maintain themſelves.

In attending to this deſcription of poor, the firſt conſideration ought to be to ſelect thoſe who are in a ſtate to re-occupy their former ſtation among the labouring poor: and to reſtore them to the firſt claſs as ſoon as poſſible, by ſuch relief as ſhould enable them to reſume their former employments, and to help themſelves and families. Where inſanity, diſeaſe, or infirmity, actually exiſt, ſuch a courſe muſt then be purſued as will enable ſuch weak and indigent perſons, while they are ſupported at the expence of the public, to perform ſuch ſpecies of labour, as may be ſuited to their peculiar ſituations, without operating as a hardſhip, but rather as an amuſement. In this manner it is wonderful how productive the exertions of even the moſt infirm might be rendered. But it muſt be accompliſhed under a management very different, indeed, from any thing which prevails at preſent.

The

The fourth claſs comprehends the aged and infirm, who are entirely paſt labour, and have no means of ſupport. Where an honeſt induſtrious man has waſted his ſtrength in labour, and endeavours to rear a family, he is well intitled to an aſylum to render the evening of his life comfortable. For this claſs the gratitude and the humanity of the community ought to provide a retreat ſeparate from the profligate and vagrant poor. But, alas! the preſent ſyſtem admits of no ſuch bleſſing. The moſt deſerving muſt ſubmit to an indiſcriminate intercourſe in workhouſes with the moſt worthleſs; whoſe polluted language and irregular conduct, render not a few of thoſe aſylums as great a puniſhment to the decent part of the indigent and infirm as a common priſon.

The fifth claſs compriſes the infant poor, who from extreme indigence, or the death of parents, are caſt upon the public for nurture. One-fifth part of the groſs number in a London workhouſe is generally compoſed of this claſs. Their moral and religious education is of the laſt importance to the community. They are the children of the public, and, if not introduced into life under circumſtances favourable to the intereſt of the ſtate, the error in the ſyſtem becomes flagrant. Profligate or diſtreſſed parents may educate their children ill; but, when thoſe under the charge of public inſtitutions are ſuffered to become depraved in their progreſs to maturity, it is a dreadful reproach on the police of the country; and yet what is to be expected from children reared in workhouſes, with the evil examples before them of the multitudes of depraved characters who are conſtantly admitted into thoſe receptacles? Young minds are generally more ſuſceptible of evil than of good impreſſions; and hence it is, that the riſing generation enter upon life with thoſe wicked and dangerous propenſities, which are viſible to the attentive obſerver in all the walks of vulgar life, in this great metropolis.

The principle of the ſtatute of the 43d of Elizabeth reſpecting the poor laws, is certainly unobjectionable; but the execution, it muſt be repeated, is defective. No part of it has been effectually executed, but that which relates to raiſing the aſſeſſments. It is eaſy to make ſtatutes; but, omnipotent as parliament is ſaid to be, it cannot give talents, knowledge, education, public ſpirit, integrity, and time, to thoſe changeable agents whom it hath charged with the execution of theſe laws.

In the management of the affairs of the ſtate, the ſovereign wiſely ſelects men eminent for their talents and integrity. Were the choice to be made on the principle eſtabliſhed by the poor laws, the nation and government could not exiſt even a ſingle year.

In the private affairs of life, the ſucceſs of every difficult undertaking depends on the degree of abilities employed in the management. In the affairs of the poor, the moſt arduous and intricate that it is poſſible to conceive; and where the greateſt talents and knowledge are required, the leaſt portion of either is ſupplied. How then can we expect ſucceſs?

Soup Establishments.

At the preſent intereſting criſis, when the high price of bread occaſions a peculiar preſſure upon the labouring people, every expedient which can, in any degree, tend to diminiſh this preſſure, becomes an important conſideration. Whatever, therefore, can be

deviſed,

deviſed, or whatever has been already ſucceſsfully carried into execution, for the purpoſe of diminiſhing the conſumption of bread-corn, ought to be as fully and correctly ſtated, and as generally diſſeminated, as poſſible.

Among the various expedients which experience has ſhewn to be beſt adapted to afford ſubſtantial relief, none ſeems to deſerve ſo much attention as ſoup eſtabliſhments. Theſe excellent inſtitutions, which have exiſted in the metropolis for more than two years, have inconteſtibly proved how much can be attained in economizing the food of man, by the neceſſary preparation of meat and vegetables upon a large ſcale, in all inſtances where a deſign of this nature is properly methodized, and conducted with attention and regularity.

In the courſe of the two laſt ſeaſons, namely, the winter and ſpring of 1798 and 1799, although no particular preſſure then exiſted, no leſs than 1,232,254 meals or Wincheſter pints of ſoup were delivered to the poor at the ſoup-houſes ſituated in Spitalfields, Clerkenwell, Southwark, and Weſtminſter; and for which, they paid an aggregate ſum amounting to 2567l. 4s. 9d. being at the rate of one halfpenny a meal, which is as near as poſſible the half of the firſt coſt, including the contingent and incidental expences.

The unparallelled ſucceſs of theſe uſeful eſtabliſhments, thus clearly manifeſted by attaching the lower claſſes of the people to a cheap, ſubſtantial, and wholeſome, food, is none of the leaſt of the advantages which have reſulted from this frugal and beneficial mode of relieving the poor. The numerous applications of the labouring poor, particularly at Spitalfields, has not only occaſioned an increaſe of boilers of very large dimenſions at moſt of the old eſtabliſhments, but has alſo excited a general diſpoſition among the benevolent and humane to erect new ſoup-houſes in every part of the metropolis, and alſo in the villages in the neighbourhood: and it is not doubted, when the whole of the propoſed new inſtitutions are ſufficiently prepared to iſſue ſoup, that above 40,000 meals or pints will be delivered daily to the poor, at half price.

A relief ſo ſalutary and extenſive, and offered (in proportion to the number of perſons who will be thus fed) at ſo very inconſiderable an expence, cannot be too highly eſtimated, ſince it is evident that through this medium the means are at length diſcovered of effectually aſſiſting the poor in ſevere ſeaſons when the neceſſaries of life are high, in a manner by which the benevolence of the opulent and humane embraces a wider field and extends infinitely beyond what the moſt ſanguine mind could have conceived to be poſſible: ſince a ſingle guinea ſubſcribed, actually affords a hearty meal to 504 perſons! and that too of food, which, from its nouriſhing quality, ſtrength, and thickneſs, cannot be conſidered as an improper ſubſtitute for bread, the conſumption of which muſt unqueſtionably be diminiſhed whereever this aliment forms a part of the food of a labouring man's family.

Where this has already been the caſe, ſome of the individuals benefited by the inſtitution, have acknowledged an actual ſaving of 3s. 6d. to 5s. a week, a ſufficient ſum in itſelf to provide for the unavoidable wants of the poor, ariſing from the advanced price of bread and other neceſſaries of life.

The advantages reſulting from the ſoup-houſes in the metropolis being thus explained, it may be neceſſary to ſtate, that their ſucceſs is alone to be attributed to the unwearied gratuitous attention of their conduc-

conductors, who, in ſyſtematizing theſe deſigns and extending their benefits in a manner not only to feed, but alſo to improve the habits, and, in ſome degree, the morals, of ſo great a portion of the labouring people, have felt themſelves amply rewarded and gratified by the thankfulneſs univerſally expreſſed for the boon.

Our anxiety to extend the number of theſe beneficial eſtabliſhments induces us to inſert ſome farther information reſpecting one of the firſt of them, that at Spitalfields. Of this the committee gave the following account:—Four iron boilers have been erected on the premiſes, capable of making 2100 quarts of ſoup. It is made according to the annexed receipt, a copy of which is hung up in the boiling-houſe for reference: its average price, excluſive of rent, wages, boilers, and improvements on the premiſes, is rather more than 1¾d. per quart. The following aſſiſtants have been found neceſſary: a woman as ſuperintendant, who lives in the houſe, rent free; her office is to attend the cooking, to meaſure out the ſoup, and to ſee that cleanlineſs be obſerved. There are alſo three men, hired by the week, who, under the direction and inſpection of ſub-committees, prepare the meat and ingredients for making the ſoup, attend the proceſs, and ſcour and keep clean the boilers, utenſils, and premiſes; which is conſidered by the committee an object of great importance.

Three members of the committee are appointed in turn as daily viſitors; at leaſt two of them attend at 6 o'clock in the evening, to ſee the meat ſent in during the day weighed, and afterwards apportioned, cut up, and put into the boilers, and the remainder hung up in the larder; the fires are then lighted, and the peaſe and other ingredients are weighed out, and afterwards locked up in the ſtore-room; the key of which, together with that of the larder, are given to the ſuperintendant. Before 11 o'clock on the following morning, the ſame three viſitors attend, for the purpoſe of delivering the ſoup to the poor: one of them is employed in giving out numerical tickets to thoſe who bring recommendations ſigned by ſubſcribers. Another viſitor is occupied in receiving the money, and reporting the number of each ticket, and the number of quarts, to the third viſitor, who regiſters them in a numerical book, by which it is intended to prevent the application of the ſame perſons more than once on the ſame day. Thus by the regularity and diſpatch uſed in ſerving the ſoup, 2100 quarts of ſoup have frequently been delivered in leſs than two hours and a half.

The following is the receipt of the ingredients employed in making 100 gallons of this ſoup:

8 Stone of beef, or 64lb.	24 lbs. of onions.
16 Ditto ſhins.	8 lbs. of ſalt.
46 lbs. of peaſe.	10 oz. of black pepper.
36 lbs. of Scotch barley.	

The boiler in which the ſoup is to be made is nearly filled with water before the other ingredients are put in, and is filled up with boiling water in the morning, to make up for evaporation during the night; during the whole of which, the ſoup continues ſimmering: the fire being damped in the evening, and heaped up with a mixture of ſmall coal, aſhes, and water, which prevents its going out in the night.

The following obſervation will, we truſt, have a good and a general effect:—If a deſire ſhould ariſe in the breaſt of any individual under whoſe

whose consideration this may fall, to assist the poor in his vicinity, by the benefits which such an institution holds forth, let not the apparent magnitude of the undertaking deter such an one; a little calm consideration and conference, assisted by an account of the mode in which such an institution is conducted, will suffice to prove that it will not be a difficult task; let him, therefore, call together a few well-disposed neighbours, whose ready disposition to serve the poor cannot be doubted, (and may not such be found in every town and village?) and consult with them upon the propriety of assisting the poor under their present pressure.

WHEATEN BREAD. The annual consumption of a person in health is averaged at one quarter of wheat (Winchester measure), which an ingenious and benevolent inhabitant of Liverpool divides as follows: 180lbs. of fine flour, 124 coarse ditto, and 68 of bran and loss, amounting in the entire to 372lbs; adding that Liverpool, calculating its population at 60,000 persons, would, at the present price of grain, save 26,000l. a-year by making household bread, in which the whole 404lbs. of flour should be used, and the bran alone omitted. The writer proceeds to state, that, by taking 47 instead of only 45lbs. from a bushel of wheat, an annual saving in the consumption of 60,000 persons would be effected of more than 2,588 quarters, which, allowing three quarters to be produced by one statute acre, would require 863 acres of land; and, on a supposition that it would yield wheat but once in four years, would require for the produce of such one year's difference 3,352 acres. Adapting this ingenious calculation to the capital, whose population is rated at 1,200,000 persons, the saving by the use of household bread would amount to 520,000l. a-year; whilst, by taking 47 instead of only 45lb. of flour from each bushel of 57lb. of wheat, 67,040 acres or 100 square miles, would be annually saved, and of course virtually added to the use of this country.

COALS. At no time within the memory of man was London ever so unprovided with coals as at this moment; and therefore, every means that can be employed to provide for our wants, or to economise the consumption, ought to be resorted to. On the continent there is a practice of mixing coal-dust with a mixture of earth and clay, which makes a very wonderful economy in the consumption; and nothing is more easy than the composition: one third of coal-dust, or of the cheapest and smallest coal, made up with double the quantity of clay into a round ball about the size of an eight-pound shot, and dried, will produce a heat fit for every purpose of a family, and which will endure five times as long as the unmixed coal. The mode of using this fire stone, as it is called, is, to place it in the grate, in making the morning fire; and, after being thoroughly heated, it will continue so for the whole day. Might not the subscription societies encourage the manufacture of these firestones, and sell them to poor families, as they do soup?

The high price which coals frequently bear in this city during the winter, is matter of serious concern. According to the present system, it seems as if the coals were supplied only in sufficient quantities to answer the immediate call for them; and, whenever an interruption happens to the navigation, a scarcity is immediately felt, and an advance in price takes place. In a plan presented some time ago to the public, it was proposed to guard against such a scarcity, by form-

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ing in the Iſle of Dogs an artificial coal-mine; that is to ſay, by keeping conſtantly a large quantity of coals there to anſwer the demand that there might be at ſuch times as the ſhips ſhould be prevented from getting into the Pool. But we have near the city many real coal-mines, from whence we could be ſupplied, if they were allowed to be worked. We all know and admire the policy that ſays our coals ſhall come from Newcaſtle; nevertheleſs it appears, that, if there are veins of coal in any of the lands near to the metropolis, they might be ſuffered to be worked at certain times, and under certain regulations. The old ſyſtem has been productive of much benefit to our navy, thought it might be ſuppoſed our preſent wide-extended commerce rendered a ſtrict adherence to it not ſo neceſſary at this time as heretofore; but the coal-mines near the metropolis might be allowed to be worked under ſuch regulations as that the meaſure ſhould not interfere with the preſent mode of ſupply—it might be regulated as the importation of corn is, i. e. that we might allow the coal-mines near the metropolis to be worked, and the city to be ſupplied from them, at any time when coals ſhall be at a certain price, which price might be fixed ſo high as not at all to check the preſent trade, by making it ſtill as much as ever the intereſt of perſons to keep their ſhips in that employ. All that can be neceſſary to ſecure a continuance of the preſent collier-trade is, to give it a monopoly at ſuch price as ſhall pay the ſhip-owners very well; all beyond this appears to be but taxing the public unneceſſarily. Thus, if ſomething like what is here ſuggeſted could be put in practice, the price of coals could never exceed here a certain ſum.

DEC. 28, 1799.

NUMBER OF INHABITANTS IN IRELAND.

SIR WILLIAM PETTY, who ſurveyed the whole kingdom of Ireland, ſtates the population in 1672, at 1,100,000. In his ſecond Drapier's Letter, publiſhed in 1724, Dean Swift obſerves, that the inhabitants then amounted to 1,500,000. In 1732, an enumeration of the inhabitants was made by order of government, and they were found to be under two millions. A calculation was made in 1791 from the hearth-money books and ſeveral other documents, and the population was, on the authority of thoſe articles, ſtated at 4,200,000; and, it was thence decided, that the inhabitants had been nearly quadrupled in the courſe of 100 years.

Dr. Duigenan, however, differs from that calculation, and is of opinion, that all the inhabitants of Ireland do not amount to more than 3,000,000. The reaſons he aſſigns for the opinion, are very ſtrong. He obſerves, that England and Wales, with advantages ſuperior to thoſe enjoyed by Ireland, have not encreaſed their population more than 1,500,000 ſince the revolution in 1688, while that of the latter is ſuppoſed to have been augmented to 3,000,000. It muſt alſo be remarked, that Ireland has, ſince the revolution, furniſhed the armies of foreign potentates, as well as thoſe of Great Britain, with multitudes of ſoldiers, and many foreign nations, particularly America, with crowds of emigrants. He thinks, that the calculation of ſix perſons to a houſe of one hearth is too great, as not more than four, if ſo many, ſhould be allowed. The number of houſes has alſo been erroneouſly ſtated. Dr. Duigenan, after ob-

ſerving that the ſuperficial contents of England and Wales are, to thoſe of Ireland, in the proportion of two to one, appeals to every intelligent man, who has travelled over the two nations, whether the local population of Ireland be not vaſtly inferior to that of England and Wales. If England and Wales have mountains and waſtes, Ireland has her mountains, waſtes, bogs, lakes, and moraſſes, of much greater extent, comparatively ſpeaking; and, in the inhabited parts of the two nations, the populouſneſs of England and Wales exceeds that of Ireland in a very great ratio. Either the calculation of the number of inhabitants in England and Wales falls vaſtly ſhort of the real number, or the number of the inhabitants of Ireland is groſsly exaggerated; and, it is probable, if Ireland contains four millions, that England and Wales contain, at leaſt, twelve millions.

The doctor concludes his obſervations in the following manner:—"I am decidedly of opinion, that the number of the inhabitants of Ireland has been exaggerated; and particularly, becauſe I have known it to be a cuſtom in Ireland for gentlemen who have aſſumed the title of patriots, conſtantly to exaggerate the ſtrength and importance of Ireland, with a view of bearding Great Britain. A ſort of inferior member of this claſs of politicians, and an united Iriſhman, lately publiſhed a pamphlet, in Dublin, relating to the health of the citizens, in which he aſſerts that the inhabitants of Dublin amount to 400,000, though I never before heard them computed at a greater number than 150,000, and they are certainly under 200,000. I am myſelf of opinion, that the whole inhabitants of Ireland do not amount to more than 3,000,000, if ſo many."

GALLERIES OF NATURAL HISTORY AT PARIS.

IN the magnificent collection of birds, there are ſeveral new ſpecies which have not hitherto been deſcribed, nor publiſhed by any traveller or naturaliſt. Among theſe are the following, which C. Lacepede has claſſified according to his method, and to which he has annexed ſpecific names.

Pſittacus phygi, the parroquet. The feathers which cover the belly of this bird are of a very beautiful red. The inhabitants of the South Sea Iſlands uſe them as ornaments for their heads, aigrettes, and aprons.

Pſittacus cyanopterus, the blue-winged parroquet. This bird, of which the neck and a great part of the wings and tail are of a beautiful blue colour, came from the Philippine Iſles.

Pſittacus macrotarſus, a ſpecies of parroquet, remarkable for the length of its hind claw, and the little black and yellow ſpecks which decorate its green plumage.

Paradiſea rubra, the red bird of Paradiſe. What principally diſtinguiſhes it from the emerald-coloured ſpecies, which it in many reſpects reſembles, is the red colour of the very long, ſlender, and delightful, plumage which covers both ſides of the body above the wings.

Phaſianus violaceus.—This large ſpecies of pheaſant is diſtinguiſhed by the moſt beautiful wavy colours, among which the violet predominates. It would be a very uſeful and a very eaſy taſk to breed it with the pheaſants of Colchis, China, &c.

Phaſianus Madagaſcarienſis, the pheaſant of Madagaſgar.—This is diſtinguiſhed from the other ſpecies of pheaſants by its fine red creſt, and the ſmallneſs of its body.

Pomarinus fuſcus, a water fowl of a kind not yet deſcribed. It conſiderably reſembles the petrel, but differs from it in having a hind claw, and by the form of its noſtrils, which are not, like thoſe of the petrel, placed at the extremity of a ſort of tube, but covered over with a very long, thin, and flat, membrane. Its beak is beſides very much hooked at the extremity. It belongs, according to C. Lacepede's diſtribution, to the firſt order of water-fowls, or palmipedes.

THE PLAGUE.

HAVING read in the newſpapers extracts of letters reſpecting the plague now raging in Barbary and other parts, I am induced to ſend you the following from a book on that moſt dreadful of all maladies, by the celebrated Dr. Mead, publiſhed in 1722, in hopes it may ſtimulate the legiſlature to take ſuch ſteps as will prevent the evil gaining admittance into this country, for ſurely no commercial advantages can counter-balance ſo dreadful a ſcourge.

Dr. Mead ſays, I take the plague to be an African fever, bred in Ethiopia or Egypt, and the infection of it carried into other parts of the world by trade. Pliny obſerves, that it always travels from the ſouthern to the weſtern parts. The plague which broke out at Conſtantinople in the year 343 ſpread its infection over all the earth, and is ſaid to have laſted fifty-two years. The laſt plague in London, ſays Dr. Hodges, was brought to us from Holland, but carried there by cotton imported from Turkey. In the year 1346, it raged in Egypt, Turkey, Greece, Syria, and the Eaſt Indies, in 1347, ſome ſhips from the Levant carried it to Sicily, Piſa, Genoa, &c. in 1348, it got into Savoy, Provence, Dauphiny, Catalonia, &c. in 1349, it ſeized England, Scotland, Ireland, and Flanders; and the next year, Germany, Hungary, and Denmark, making ſuch dreadful deſtruction, that it is ſaid to have diſpeopled the earth of more than half its inhabitants. It is very remarkable, that the ſeveral countries of Europe have always ſuffered more or leſs in this way, according as they have had more or leſs commerce with Africa. Goods from infected places extend the infection more than by any other means. The ſeeds of the plague may lie dormant a whole winter, but break out again in the ſpring, and when the conſtitution of the air happens to favour infection, it rages with greater violence. Contagious matter lodges moſt in goods of a looſe and ſoft texture, which being packed up and carried into other countries, let out, when opened, the empoiſoned ſeeds of infection. In the plague at Florence, 1348, two hogs finding in the ſtreets rags which had been thrown out from a poor man dead of the diſeaſe, after ſnuffing on them and tearing them with their teeth, fell into convulſions, and died in leſs than an hour. In the plague in Verona, no leſs than 25 perſons were ſucceſſively killed by the infection of one fur garment; and Foreſtus mentions an inſtance of ſeven children who died by playing on cloths brought to Alkmaar in North Holland, from an infected houſe in Zealand. Mr. Williams, chaplain to Sir Robert Sutton, formerly ambaſſador at Conſtantinople, relates that

a baſſa, who made an expedition to the frontiers of Poland, one of the janiſſaries under his command died of the plague; his jacket being a very rich one, another janiſſary bought it, and he died; and the like misfortune befel five more who had it; and then the baſſa (ſpite of his tenets) ordered it to be burned. Dr. Mead writes, that the greateſt danger is from ſuch goods as are moſt apt to contain infection; ſuch as cotton, hemp, flax, paper, books, ſilk, linen, wool, feathers, hair, and all kinds of ſkins; theſe, he ſays, ought to be unpacked and expoſed in quarantine in the freſh air for forty days: too much caution in this point cannot be uſed. Again, he ſays, unleſs goods are opened when put into the lazarettos, it will avail nothing. The learned Dr. Halley relates, that a ſack of cotton, put on-ſhore by ſtealth in the iſland of Bermuda, lay above a month without any prejudice to the people of the houſes where it was hid; but, when it came to be diſtributed among the inhabitants, it carried ſuch a contagion with it, that the living ſcarcely ſufficed to bury the dead. Alex. Benedictus gives a very diſtinct relation of a feather-bed that was laid by for ſeven years on ſuſpicion of its being infected, which produced miſchievous effects at the end of that great length of time; and Sir Theodore Maxerne, in a paper of advice againſt the plague, laid before the king in council, in 1651, ſays, that ſome cloths fouled from plague ſores, being lodged between matting and the walls of a houſe at Paris, gave the plague ſeveral years after to a workman who took them out, which preſently ſpread through the city. Dr. Mead writes, if a ſhip comes from any place where the plague raged with more than uſual violence at the time of its departure, it will be the ſecureſt method to burn all the goods, and even the ſhip. The plague will often ſtop at the approach of winter, but break out with redoubled force in the warmth of ſpring; as in the great plague at Genoa, in the firſt ſummer about 10,000 died, in the winter hardly any; but in the ſummer after no leſs than 60,000: and the ſame with the laſt plague in London, which appeared in the latter end of the year 1664, and was ſtopped by a hard froſt of three months till the enſuing ſpring. Now, if goods brought from an infected place ſhould contain any of the latent contagion, there will be danger of their producing the ſame miſchief in the place to which they are brought, as they would have cauſed in the place from whence they came.—DEC. 10, 1799.

DIRECTIONS FOR PRESERVING MEAT AT SEA WITHOUT SALT.

SALTED meats form the general food of perſons at ſea, and, however carefully they may be prepared, the uſe of them is at all times pernicious. When veſſels are a long time at ſea without putting into any port, the ſcurvy is found to rage amongſt the crews, and in a manner the more dangerous, as the means of cure are ſlow and uncertain. I had long reflected on the mode of preparing meat ſo as that it may be preſerved a long time without the uſe of ſalt, and conſequently without impairing its nutritive qualities. When I was in the Spaniſh part of the Iſland of St. Domingo, I had frequent occaſion to make uſe of taſſos, which are long ſlices of meat, deprived of its fat, and afterwards dried in ſmoke. This taſſo preſerves itſelf for a long time without any alteration, even in that hot climate,

climate, when it is well prepared. I conſidered of employing ſimilar means, with ſome modifications, in order to ſecure the dried meats from the effects of humidity, and of preparing a large quantity in a manner leaſt expenſive. The following is the proceſs which I have employed: it is the reſult of many experiments, with which I had every reaſon to be ſatisfied.

It will be neceſſary in the ſlaughter-houſe of the marine to ſelect the moſt fleſhy parts of the four quarters of the beeves which are killed for their daily conſumption, which of courſe muſt then be doubled. The muſcles being cleared of the ſurrounding fat, are to be cut into large ſlices perpendicularly, according to the direction of the fibres. Theſe ſlices are to be expoſed to the heat of the ovens in which the bread and biſcuit is baked for the uſe of the navy, when they are at a heat of no more than fifty degrees by the thermometer of Reaumur, and to remain there until the ovens be cold: an opening ſhould be left for the evaporation of the moiſture. The ſame operation is to be repeated, taking care to turn the large ſlices, until they are entirely dried, and of an horny but friable conſiſtence. On the other hand it will be neceſſary to melt the fat which has been taken away with the ſuet of the cattle, and to purify the whole by means of ſalt and boiling water; but in the fat thus purified care muſt be taken that no moiſture ſhall remain, and it would alſo be of advantage if ſome aromatic herbs were employed in this part of the proceſs. Every thing being thus prepared, a number of caſks ſhould be ready, thoſe which have ſerved for the conveyance of ſweet oil are moſt ſuited for the purpoſe; the ſlices of dried meat are in theſe to be placed in layers, and the melted fat, not being too hot, is to be poured in upon them. The caſks are then to be headed, taking care that no vacant ſpace is left, and both ends are immediately to be caulked.

This proceſs, very ſimple, and by no means expenſive, being executed with preciſion, has the advantage of ſecuring an agreeable food, of preſerving the health of the ſailors, and of containing a double quantity of proviſions in the ſame ſpace that would be occupied by meat ſalted in the ordinary manner. The proviſion being reduced into a ſmall compaſs, a ſmaller quantity may of courſe be given. The fat of the beef, being purified with care, may ſerve to ſeaſon the roots and greens, and to enrich the ſoup of the crews.

The proceſs is to be exactly the ſame with reſpect to mutton; and, where this is not dearer than beef, ſuch a quantity may be laid in as to preclude entirely the neceſſity of uſing ſalted proviſions.

CARMEN SECULARE.

MR. PYE, in his preface to the Ode for the New Century, pays much reſpect to the opinion of thoſe who differ from him on the ſubject of the commencement of the nineteenth century, but brings in aid of his own ſufficient authority to juſtify him in publiſhing his Carmen Seculare in the year 1800. The extracts which follow are certainly the moſt ſatisfactory authorities that have yet appeared of the time, from the birth of Chriſt, being marked by the cardinal number of years. Mr. Pye thus expreſſes himſelf:—

"The controverſy about the commencement of the nineteenth century, which has lately ſo much occupied the public mind, being

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of conſequence to me, who am officially called on to give a public opinion on it, I very early turned my thoughts to the ſubject, and ſoon adopted the notion moſt generally received, that January 1, 1801, would be the firſt day of the nineteenth century.

"I found, however, all authority drawn from former precedents againſt me; I found that the Secular Maſque of Dryden was performed at Drury-lane theatre early in the year 1700; and that Prior's Carmen Seculare was written for the ſame year, and obviouſly for the 1ſt of January. Theſe examples were ſufficient authority for me, independently of their ſhewing the received opinion of that time. I found alſo in the ſchedule to the act of parliament for altering the ſtyle, and which is printed in all the Common Prayer Books, theſe words:—"For the next century, that is, from the year 1800 to the year 1899, incluſive."

"In the French Encyclopedie, Article Lettre Dominicale, we find, "Il changera en 1800, en 1900, en 2100, &c. en un mot, au commencement de chacun des ſiecles dont la première année n'eſt pas biſſextile." And again, under Cycle Solaire, explaining the tables, it ſays, "La première de ces tables ſera pour le ſiecle qui a commencé par l'année 1600; la ſeconde pour les ſiecles qui commencent par les années 1700, 2100, 2500, 2900, 3400, &c."

"There is yet a ſtronger authority, ariſing from the hiſtory of the inſtitution of the Chriſtian era, as it is uſually called, though now known not to be reckoned from the real birth of our Saviour, but which makes no difference with reſpect to the preſent queſtion.

"A native of Scythia, Dionyſius Exiguus, ſo named from his ſtature, who exerciſed the function of abbot at Rome, in the ſixth century, thinking it diſgraceful that the Chriſtians ſhould reckon their years from the foundation of a city which was the ſeat of their perſecutors, reſolved to introduce a new era from the birth of Chriſt, which he fixed on the 25th of December, in the year of Rome, 1753; but to accommodate it to the Roman calendar, he reckoned from the 1ſt of January enſuing, in the manner that he exemplified by the following table of the firſt century, and on which the calculation of the beginning and cloſe of the century juſt commenced in the table in our Common Prayer books is founded.

0 1 2 3 4 5 6 7 8 9 10, &c

ON THE VALUABLE PROPERTIES OF MILK.

ACCORDING to Dr. Cullen, milk is a connecting and intermediate ſubſtance between animals and vegetables. It ſeems immediately to be ſecreted from the chyle, both being a white liquor of the ſame conſiſtence: it is moſt copiouſly ſecreted after meals, and of an aceſcent nature. In moſt animals who live on vegetables, the milk is aceſcent; and it is uncertain, though at the ſame time no obſervation proves the contrary, whether it is not ſo likewiſe in carnivorous animals. But, whatever be in this, it is certain, that the milk of all animals who live on vegetables is aceſcent. Milk being derived from the chyle, we thence conclude its vegetable nature; for in thoſe who live on both promiſcuouſly, more milk is got, and more quickly, from the vegetable than the animal food. Milk, however, is not purely vegetable; though we have a vegetable liquor

liquor that refembles its taſte, conſiſtence, colour, aceſcency, and the ſeparability of the oily part, viz. an emulſion of the nuces oleoſæ and farinaceous ſubſtances. But theſe want the coagulable part of milk, which ſeems to be of animal-nature, approaching to that of the coagulable lymph of the blood. Milk, then, ſeems to be of an intermediate nature, between chyle taken up from the inteſtines and the fully elaborated animal-fluid.

Its contents are of three kinds; firſt, an oily part, which, whatever may be ſaid concerning the origin of other oils in the body, is certainly immediately derived from the oil of the vegetables taken in, as with theſe it agrees very exactly in its nature, and would entirely if we could ſeparate it fully from the coagulable part. Another mark of their agreement is the ſeparability, which proves that the mixture has been lately attempted, but not fully performed. 2dly, Beſides this oily, there is a proper coagulable part. And, 3dly, Much water accompanies both, in which there is diſſolved a ſaline ſaccharine ſubſtance. Theſe three can be got ſeparate in cheeſe, butter, and whey; but never perfectly ſo, a part of each being always blended with every other part.

Nothing is more common, from what has been ſaid of its immediate nature, than to ſuppoſe that it requires no aſſimilation; and hence has been deduced the reaſon of its exhibition in the moſt weakly ſtate of the human body. But, wherever we can examine milk, we always find that it coagulates, ſuffers a decompoſition, and becomes aceſcent. Again, infants, who feed entirely on milk, are always troubled with eructations, which every body obſerves are not of the ſame quality with the food taken; and therefore it appears, that, like all other food, milk turns naturally aceſcent in the ſtomach, and only enters the chyle and blood in conſequence of a new recompoſition. It approaches then to the nature of vegetable aliment, but is not capable of its noxious vinous fermentation, and therefore has an advantage over it; neither from this quality, like animal-food, is it heating in the ſtomach, and productive of fever; though at the ſame time, from its quantity of coagulable matter, it is more nouriſhing than vegetables.

Milk is the food moſt univerſally ſuited to all ages and ſtates of the body; but it ſeems chiefly deſigned by nature as the food of infants. When animals are in the fœtus-ſtate, their ſolids are a perfect jelly, incapable of an aſſimilatory power. In ſuch ſtate nature has perfectly aſſimilated food, as the albumen ovi in the oviparous, and in the viviparous animals certainly ſomewhat of the ſame kind, as it was neceſſary the veſſels ſhould be filled with ſuch a fluid as would make way for an after-aſſimilation. When the infant has attained a conſiderable degree of firmneſs, as when it is ſeparated from the mother, yet ſuch a degree of weakneſs ſtill remains as makes ſomewhat of the ſame indication neceſſary, it behoves the infant to have an alkaleſcent food ready prepared, and at the ſame time its noxious tendency to be avoided. Milk then is given, which is alkaleſcent, and, at the ſame time, has a ſufficient quantity of acidity to correct that alkaleſcency. As the body advances in growth, and the alkaleſcent tendency is greater, the animal, to obviate that tendency, is led to take vegetable food, as more ſuited to its ſtrength of aſſimilation.

Dr.

Dr. Cullen obſerves, that milk is almoſt ſuited to all temperaments; and it is even ſo to ſtomachs diſpoſed to acceſcency, more than thoſe ſubſtances which have undergone the vinous fermentation; nay, it even cures the heart-burn, checks vinous fermentation, and precipitates the lees, when, by renewal of fermentation, the wine happens to be fouled. It therefore very properly accompanies a great deal of vegetable aliment; although ſometimes its acceſcency is troubleſome, either from a large proportion taken in, or from the degree of it; for, according to certain unaccountable circumſtances, different acids are formed in the ſtomach in different ſtates of the body; in a healthy body, e. g. a mild one; in the hypochondriac diſeaſe, one ſometimes as corroſive as the foſſil acid. When the acidity of milk is carried to a great degree, it may prove remarkably refrigerent, and occaſion cold crudities, and the recurrence of intermittent fevers. To take the common notion of its paſſing unchanged into the blood, it can ſuffer no ſolution. But, if we admits its coagulum in the ſtomach, then it may be reckoned among ſoluble or inſoluble foods, according as that coagulum is more or leſs tenacious. Formerly rennet, which is employed to coagulate milk, was thought an acid; but, from late obſervations, it appears, that, if it be an acid, it is very different from other acids, and that its coagulum is ſtronger than that produced by acids. It has been imagined, that a rennet is to be found in the ſtomachs of all animals, which cauſes coagulation of milk; but to Dr. Cullen the coagulation of milk ſeems to be owing to a weak acid in the ſtomach, the relicts of our vegetable food, inducing, in healthy perſons, a weak and ſoluble coagulum: but in different ſtomachs this may be very different, in theſe becoming heavy and leſs ſoluble food, and ſometimes even evacuated in a coagulated undiſſolved ſtate both by ſtomach and ſtool.

As milk is acceſcent, it may be rendered ſometimes purgative by mixing with the bile; and ſome examples of this have been remarked. More commonly, however, it is reckoned among thoſe foods which occaſion coſtiveneſs.

Hoffman, in his experiments on milk, found that all kinds of it contained much water; and, when this was diſſipated, found the reſiduum very different in their ſolubility. But we muſt not thence conclude, that the ſame inſolubility takes place in the ſtomach; for extracts made from vegetables with water are often very inſoluble ſubſtances, and hardly diffuſible through water itſelf: therefore, in Hoffman's extracts, if we may ſo call them, of milk, ſomewhat of the ſame kind might have appeared; and theſe ſubſtances, which in their natural ſtate were not ſo, might appear very inſoluble. However, we may allow that milk is always ſomehow inſoluble in the inteſtines, as it is of a drying nature, and as cheeſe, &c. is very coſtive. And this effect ſhews that milk is always coagulated in the ſtomach: for, if it remained fluid, no fæces would be produced, whereas ſometimes very hard ones are obſerved. In the blood-veſſels, from its animal-nature, it may be conſidered as nutritious; but when we conſider its vegetable contents, and acceſcency in the primæ viæ, we find that, like animal-food, it does not excite that degree of fever in the time of digeſtion, and that from its acceſcency it will reſiſt putrefaction. Hence its uſe in hectic fevers, which, whatever be their cauſe, appear only to be exacerbations of natural

natural feveriſh paroxyſms, which occur twice every day, commonly after meals, and at night. To obviate theſe, therefore, we give ſuch an aliment as produces the leaſt exacerbation of theſe fevers: and of this nature is milk, on account of its aceſcent vegetable nature.

There appears alſo ſomewhat peculiar to milk, which requires only a ſmall exertion of the animal-powers in order to its aſſimilation; and beſides, in hectic complaints there is wanted an oily bland food, approaching to the animal-nature; ſo that on all theſe accounts milk is a diet peculiarly adapted to them, and, in general, to moſt convaleſcents, and to thoſe of inflammatory temperaments. So far of milk in general. We ſhall now ſpeak of the particular kinds which are in common uſe.

The milk of women, mares, and aſſes, agree very much in their qualities, being very dilute, having little ſolid contents, and, when evaporated to dryneſs, having theſe very ſoluble, containing much ſaccharine matter, of a very ready acceſcency, and, when coagulated, their coagulum being tender and eaſily broke down. From this view they have leſs oil, and ſeem to have leſs coagulable matter than the reſt.

The milk of cows, ſheep, and goats, agree in oppoſite qualities to the three juſt mentioned; but here there is ſomewhat more of gradation. Cows milk comes neareſt to the former milk: goats milk is leſs fluid, leſs ſweet, leſs flatulent, has the largeſt proportion of inſoluble part after coagulation, and indeed the largeſt proportion of coagulable part; its oily and coagulable parts are not ſpontaneouſly ſeparable, never throwing out a cream, or allowing butter to be readily extracted from it. Hence the virtues of theſe milks are obvious, being more nouriſhing, though at the ſame time leſs eaſily ſoluble in weak ſtomachs, than the three firſt, leſs aceſcent than theſe, and ſo more rarely laxative, and peculiarly fitted for the diet of convaleſcents without fever. The three firſt again are leſs nouriſhing, more ſoluble, more laxative, as more aceſcent, and adapted to the convaleſcents with fever.

Theſe qualities, in particular milks, are conſiderably diverſified by different circumſtances. Firſt, Different animals, living on the ſame diet, give a conſiderably different milk; for there ſeems to be ſomething in the conſtitution, abſtracting from the aliment, which conſtitutes a conſiderable diverſity of milk, not only in the ſame ſpecies of animals, but alſo in the ſame animal, at different ages, and at different diſtances after delivery: this applies to the choice of nurſes. Secondly, Milk follows the nature of the aliment more than any other juice in the human body, being more or leſs fluid and dilute, more or leſs ſolid and nouriſhing, in proportion as theſe qualities are more or leſs in the aliment. The nature of the aliment differs according to its time of growth, e. g. old graſs being always found more nouriſhing than young. Aliment, too, is always varied according to the ſeaſon, as that is warm or dry, moiſt or cloudy.

The milk of each particular kind of animal is fitter for particular purpoſes, when fed on proper food.—Thus the cow delights in the ſucculent herbage of the vale: if the ſheep be fed there he certainly rots, but on the higher and more dry ſide of the mountain he feeds pleaſantly and healthy; while the goat never ſtops near the bottom, but aſcends to the craggy ſummit: and certainly the milks of theſe animals are always beſt on their proper ſoil, and that of goats is beſt

on a mountainous country. From a diſſertation of Linnæus, we have many obſervations concerning the diverſity of plants on which each animal chooſes to feed. All the Swediſh plants which could be collected together, were preſented alternately to domeſtic animals, and then it appeared that the goat lived on the greateſt variety, and even on many which were poiſonous to the reſt; that the cow choſe the firſt ſucculent ſhoots of the plant, and neglected the fructification; which laſt was preferred by the goat. Hence may be deduced rules concerning the paſturage of different animals; e. g. Farmers find, that, in a paſture which was only fit to feed a certain number of ſheep, an equal number of goats may be introduced, while the ſheep are no leſs nouriſhed than before.

It is not eaſy to aſſign the difference between milk freſh-drawn and that detained in the open air for ſome time: but, certainly there is ſome materal one, otherwiſe nature univerſally would have directed infants to ſucking; and indeed it ſeems, better than the other, fitted for digeſtion and nouriſhment. Phyſicians have ſuppoſed that this depended on the evaporation of ſome *ſpt. rector.* but our author cannot conceive any ſuch, except common water, here; and beſides, theſe volatile parts can hardly be nutritions. A more plauſible account ſeems deducible from mixture: milk new-drawn has been but lately mixed, and is expoſed to ſpontaneous ſeparation, a circumſtance hurtful to digeſtion; none of the parts being, by themſelves, ſo eaſily aſſimilated as when they are all taken together. Hence, then, milk new-drawn is more intimately blended, and therefore then is moſt proper to weakly perſons and infants.

Another difference in the uſe of milk expoſed for ſome time to the air, is taking it boiled or unboiled. Phyſicians have generally recommended the former; but the reaſon is not eaſily aſſigned. Perhaps it is this:—Milk kept for ſome time expoſed to the air has gone ſo far to a ſpontaneous ſeparation; whereas the heat thoroughly blends the whole, and hence its reſolution is not ſo eaſy in the ſtomach; and thus boiled milk is more coſtive than raw, and gives more fæces. Again, when milk is boiled, a conſiderable quantity of air is detached, as appears from the froth on the ſurface; and air is the chief inſtrument of fermentation in bodies; ſo that after this proceſs it is not liable to aceſcency: for theſe reaſons it is proper for the robuſt and vigorous.

Another difference of milk is, according as it is fluid or coagulated. The coagulated is of two kinds, as induced by rennet, or the natural aceſcency of the milk. The former preparation makes the firmer and leſs eaſily ſoluble coagulum; though, when taken with the whey unſeparated, it is leſs difficult of ſolution, though more ſo than any other coagulum in the ſame caſe. Many nations uſe the latter form, which is eaſier ſoluble, but very much aceſcent, and therefore, in point of ſolution, ſhould be confined to the vigorous, in point of aceſcency, to thoſe who live on alkaleſcent food; and in the laſt caſe, the Laplanders uſe it as their chief aceſcent condiment. From the ſame conſiderations it is more cooling, and in its other effects like all other aceſcent vegetables.

Milk by evaporation yields a ſweet ſaline matter, of which Dr. Lewis gives the following proportions:

Twelve

Twelve ounces of	Left of dry matter	From which water extracted a ſweet ſaline ſubſtance amounting to
Cows milk	13 drams.	1½ drachms.
Goats milk	12½	1½
Human milk	8	6
Aſſes milk	8	6

The ſaline ſubſtance extracted from aſſes milk was white, and ſweet as ſugar; thoſe of the others brown or yellow, and conſiderably leſs ſweet; that from cows milk had the leaſt ſweetneſs of any.

On diſtilling twelve quarts of milk *in balneo mariæ*, at leaſt nine quarts of pure phlegm were obtained: the liquor which afterwards aroſe was acidulous, and by degrees grew ſenſibly more and more acid as the diſtillation was continued. After this came over a little ſpirit, and at laſt an empyreumatic oil. The remaining ſolid matter adhered to the bottom of the retort, in the form of elegant ſhining black flowers, which being calcined and elixated yielded a portion of fixed alkaline ſalt.

Milk ſet in a warm place, throws up to the ſurface an unctuous cream, from which, by agitation, the butter is eaſily ſeparated. The addition of alkaline ſalts prevents this ſeparation, not (as ſome have ſuppoſed) by abſorbing an acid from the milk, but by virtue of their property of intimately uniting oily bodies with watery liquors. Sugar, another grand intermedium betwixt oils and water, has this effect in a greater degree, though that concrete is by no means alkaline, or an abſorbent of acids.

The ſweet ſaccharine part of the milk remains diſſolved in the whey after the ſeparation of the curd or cheeſy matter, and may be collected from it a white cryſtalline form, by boiling the whey till all remains of the curdled ſubſtance have fallen to the bottom; then filtering, evaporating it to a due conſiſtence, ſetting it to ſhoot, and purifying the cryſtals by ſolution in water and a ſecond cryſtallization. Much has been ſaid of the medicinal virtues of this ſugar of milk, but it does not ſeem to have any conſiderable ones: it is from cows milk that it has been generally prepared; and the cryſtals obtained from this kind of milk have but little ſweetneſs.

When milk is ſuffered to coagulate ſpontaneouſly, the whey proves acid, and on ſtanding grows more and more ſo till the putrefactive ſtate commences. Sour whey is uſed as an acid, preferably to the directly vegetable or the mineral acids, in ſome of the chemical arts; as for diſſolving iron in order to the ſtraining of linen and leather. This acid was commonly made uſe of in the bleaching of linen, for diſſolving and extracting the earthy particles left in the cloth by the alkaline ſalts and lime employed for cleanſing and whitening it. Butter-milk is preferred to plain four-milk or four-whey: this laſt is ſuppoſed to give the cloth a yellow colour. Dr. Home, in his ingenious treatiſe on this ſubject, recommends water acidulated with ſpirit of vitriol (in the proportion of about half an ounce, or at moſt three quarters of an ounce, to a gallon), as preferable in many reſpects to the acid of milk, or of the more directly vegetable ſubſtances. He obſerves, that the latter are often difficultly procurable, abound with oleaginous particles, and haſten to corruption; whilſt the vitriolic acid is cheap, and pure, and indiſ-

poſed to putrefy: that milk takes five days to perform its office, whilſt the vitriolic acid does it in as many hours, perhaps in as many minutes: that this acid contributes alſo to whiten the cloth, and does not make it weaker though the cloth be kept in it for months. He finds, that acids as well as alkalies, extract an oily matter from the cloth, and loſe their acidity and alkalicity. Since this treatiſe appeared, the uſe of ſour-milk is very generally ſuperſeded by oil of vitriol.

It is obſervable, that aſſes milk is greatly diſpoſed, on ſtanding for a little time, to become thick and ropy. In the Breſlan collection for the year 1720, there is a remarkable account of milk (which probably was that of the aſs) grown ſo thick and tenacious as to be drawn out into long ſtrings, which, when dried, were quite brittle.

New cows milk, ſuffered to ſtand for ſome days on the leaves of butterwort or ſun-dew, becomes uniformly thick, ſlippery, and coherent, and of an agreeable ſweet taſte, without any ſeparation of its parts. Freſh milk, added to this, is thickened in the ſame manner, and this ſucceſſively. In ſome parts of Sweden, as we are informed in the Swediſh Memoirs, milk is thus prepared for food.

New milk has a degree of glutinous quality, ſo as to be uſed for joining broken ſtone-ware. There is a far greater tenacity in cheeſe properly prepared.

Milk, when examined by a microſcope, appears compoſed of numerous globules ſwimming in a tranſparent fluid. It boils in nearly the ſame degree of heat with common water; ſome ſorts rather ſooner, and ſome a little later: after boiling, it is leſs diſpoſed to grow ſour than in its natural ſtate. It is coagulated by acids both mineral and vegetable, and by alkalies both fixed and volatile. The coagulum made by acids falls to the bottom of the ſerum; that made by alkalies ſwims on the ſurface, commonly forming (eſpecially with volatile alkalies) a thick coriaceous ſkin. The ſerum, with alkalies, proves green or ſaffron; with acids, it differs little in appearance from the whey that ſeparates ſpontaneouſly. The coagulum formed by acids is diſſolved by alkalies, and that formed by alkalies is re-diſſolved by acids; but the milk does not in either caſe reſume its original properties. It is coagulated by moſt of the middle ſalts, whoſe baſis is an earth or a metallic body; as ſolution of alum, fixed ſal ammoniac, ſugar of lead, green and blue vitriol; but not by the chalybeate or purging mineral waters, nor by the bitter ſalt extracted from the purging waters. Among the neutral ſalts that have been tried, there is not one that produces any coagulation. They all dilute the milk, and make it leſs diſpoſed to coagulate with acids or alkalies.—Nitre ſeems to have this effect in a greater degree than the other neutral ſalts. It is inſtantly coagulated by highly-rectified ſpirit of wine, but ſcarcely by a phlegmatic ſpirit. It does not mingle with expreſſed oils. All the coagula are diſſolved by gall.

It has generally been ſuppoſed by medical authors, that the milk of animals is of the ſame nature with chyle, and that the human milk always coagulates on the ſtomach of infants; but in a late diſſertation upon the ſubject by Mr. Clarke, member of the royal Iriſh academy, we find both theſe poſitions controverted. According to him, woman's milk, in an healthy ſtate, contains no coagulable, mucilaginous, or cheeſy principle, in its compoſition; or it contains ſo little, that it cannot admit of any ſenſible proof. Dr. Rutty

ſtates,

ſtates, that it does not afford even a ſixth part of the curd which is yielded by cows milk; and Dr. Young denies that it is at all coagulable either by rennets or acids. This is confirmed by Dr. Ferris, who in 1782 gained the Harveian prize-medal at Edinburgh by a diſſertation upon milk. Mr. Clarke informs us, that he has made a vaſt number of experiments upon woman's milk with a view to determine this point. He made uſe of ardent ſpirits, all the different acids, infuſions of infants ſtomachs, and procured the milk of a great many different women; but in no inſtance, excepting one or two, did he perceive any thing like curd. This took place in conſequence of a ſpontaneous aceſcency; and only a ſmall quantity of ſoft flaky matter was formed, which floated in the ſerum. This he looked upon to be a morbid appearance.

The general opinion that woman's milk is coagulable, has ariſen from a ſingle circumſtance, viz. that infants frequently vomit the milk they ſuck in a ſtate of apparent coagulation. This greatly perplexed Dr. Young; who, after having tried in vain to coagulate human milk artificially, concluded, that the proceſs took place ſpontaneouſly in the ſtomach; and that it would always do ſo if the milk were allowed to remain in a degree of heat equal to about ninety-ſix degrees of Fahrenheit. Mr. Clarke took equal quantities of three different kinds of milk, and put them into bottles ſlightly corked, and theſe bottles into water, the temperature of which was kept up by a ſpirit-of-wine lamp as near as poſſible to ninety-ſix degrees of Fahrenheit: but, after frequently examining each bottle during the experiment, at the expiration of ſeveral hours there was not the ſmalleſt tendency towards coagulation to be perceived in any of them; the cream was only thrown to the ſurface in a thick and adheſive form, and entirely ſeparated from the fluid below, which had ſomething of a grey and wheyiſh appearance. As the matter vomited by infants is ſometimes more adheſive than we can ſuppoſe cream to be, Mr. Clarke ſuppoſed that the curd might be ſo entangled with the cream, as to be with difficulty ſeparated from it; but, having collected a quantity of rich cream from the milk of different women, he repeated the experiment with preciſely the ſame event, not being able in any one inſtance to produce the ſmalleſt quantity of curd. To determine, however, what effects might be produced upon milk by the ſtomach of an infant, Mr. Clarke made the following experiment: having taken out the ſtomach of a fœtus which had been deprived of life by the uſe of inſtruments, he infuſed it in a ſmall quantity of hot water, ſo as to make a ſtrong infuſion. He added a tea-ſpoonful of this infuſion to equal quantities of cows and human milk; the conſequence of which was, that the cow's milk was firmly coagulated in a ſhort time, but the human milk was not altered in the leaſt; neither was the leaſt coagulation produced by adding a ſecond and third ſpoonful to the human milk. "Upon the whole, then, (ſays Mr. Clarke,) I am perſuaded it will be found, that human milk, in an healthy ſtate, contains little or no curd, and that the general opinion of its nature and properties is founded upon fallacious analogy and ſuperficial obſervations made on the matter vomited by infants. We may preſume, that the cream of woman's milk, by its inferior ſpecific gravity, will ſwim on the ſurface of the contents of the ſtomach; and, being of an oily nature, that it will be of more difficult digeſtion than

than any other conſtituent part of milk. When an infant then ſucks very plentifully, ſo as to over-diſtend the ſtomach, or labours under any weakneſs in the powers of digeſtion, it cannot appear unreaſonable to ſuppoſe, that the cream ſhall be firſt rejected by vomiting. Analogous to this, we know that adults affected with dyſpepſia often bring up greaſy fluids from the ſtomach by eructation, and this eſpecially after eating fat meat. We have, in ſome inſtances, known this to blaze when thrown into the fire like ſpirit of wine or oil." Our author derives a confirmation of his opinion from the following obſervation, viz. that curds vomited by infants of a few days old are yellow, while they become white in a fortnight or three weeks. This he accounts for from the yellow colour of the cream thrown up by the milk of women during the firſt four or five days after delivery.

Mr. Clarke likewiſe controverts that common opinion of the human milk being ſo prone to acidity, that a great number of the diſeaſes of children are to be accounted for from that principle. "Whoever (ſays he) takes the trouble of attentively comparing human milk with that of ruminant animals, will ſoon find it to be much leſs prone to run into the aceſcent or acid proceſs. I have very often expoſed equal quantities of human and cows milk in degrees of temperature, varying from the common ſummer heat, or 65°, to 100°; and I have conſtantly found that cows milk acquires a greater degree of acidity in thirty-ſix hours than the human did in many days; cows milk becomes offenſively putrid in four or five days; a change which healthy human milk, expoſed in the ſame manner, will not undergo in many weeks, nay ſometimes in many months. I once kept a few ounces of a nurſe's milk, delivered about ſix or ſeven days, for more than two years in a bottle moderately corked. It ſtood on the chimney-piece, and was frequently opened to be examined. At the end of this period it ſhewed evident marks of moderate acidity, whether examined by the taſte, ſmell, or paper ſtained by vegetable blues or purples; the latter is changed to a florid red colour, whereas cows milk kept a few days changed the colour of the ſame paper to a green, thereby clearly ſhewing its putreſcent tendency."

Our author next goes on to conſider of the probability there is of milk becoming ſo frequently and ſtrongly acid as to occaſion moſt of the diſeaſes of infants. He begins with an attempt to ſhew, that the phenomena commonly looked upon to be indications of acrimony are by no means certain. Curdled milk has already been ſhewn to be no ſign of acidity; and the other appearance, which has commonly been thought to be ſo certain, viz. green fæces, is, in the opinion of Mr. Clarke, equally fallacious. In ſupport of this he quotes a letter from Dr. Sydenham to Dr. Cole; in which he ſays that the green matter vomited by hyſterical women is not any proof of acrid humours being the cauſe of that diſeaſe, for ſea-ſick people do the ſame. The opinion of green fæces being an effect of acidity, proceeds on the ſuppoſition that a mixture of bile with an acid produces a green colour; but it is found, that the vegetable acid, which only can exiſt in the human body, is unable to produce this change of colour, though it can be effected by the ſtrong mineral acids. As nothing equivalent to any of theſe acids can be ſuppoſed to exiſt in the bowels of infants, we muſt therefore take ſome other method of accounting for the green fæces frequently evacuated by them.

"Why

"Why ſhould four milk, granting its exiſtence, give riſe to them in infants, and not in adults? Have butter-milk, ſummer-fruits of the moſt acefcent kind, lemon or orange-juice, always this effect in adults by their admixture with bile? This is a queſtion which, I believe, cannot be anſwered in the affirmative."

On the whole, Dr. Clarke conſiders the diſeaſe of acidity in the bowels, though ſo frequently mentioned, to be by no means common. He owns, indeed, that it may ſometimes occur in infancy as well as in adults, from weakneſs of the ſtomach, coſtiveneſs, or improper food; and an indubitable evidence is afforded by fæces which ſtain the blue or purple colour of vegetables to a red, though nothing can be inferred with certainty from the colour or ſmell.

The doctor next proceeds to ſtate ſeveral reaſons for his opinion, that the greater number of infantile diſeaſes are not owing to acidity: 1. Woman's milk in an healthy ſtate contains little or no coagulable matter or curd. 2. It ſhews leſs tendency out of the body to become acefcent than many other kinds of milk. 3. The appearances which have been generally ſuppoſed to characteriſe its acidity do not afford ſatisfactory evidence of ſuch a morbid cauſe. 4. Granting this to be the caſe, we have plenty of mild abſorbents, capable of deſtroying all the acid which can be ſuppoſed to be generated in the bowels of an infant; yet many children are obſerved to die in conſequence of theſe diſeaſes ſuppoſed to ariſe from acidity. 5. Though the milk of all ruminant animals is of a much more acefcent nature than that of the human ſpecies, yet the young of theſe animals never ſuffer any thing like the diſeaſes attributed to acidity in infants. 7. Hiſtory informs us, that whole nations uſe ſour curdled milk as a conſiderable part of their food without feeling any inconvenience; which, however, muſt have been the caſe, if acidity in the ſtomach were productive of ſuch deleterious effects as has been ſuppoſed.

The reaſoning of Dr. Clarke ſeems here to be very plauſible, and nothing has as yet been offered to contradict it. The Reviewers in taking notice of the treatiſe only obſerve, that the doctor's poſitions are ſupported by great probability; yet "they have ſeen them, or think they have ſeen them, contradicted by the appearance of diſeaſes and the effects of medicines;" ſo that they muſt leave the ſubject to farther examination.

In a memoir by Meſſrs. Parmentier and Deyeux, members of the royal college of pharmacy, &c. in Paris, we have a great number of experiments on the milk of aſſes, cows, goats, ſheep, and mares, as well as of women. The experiments on cows milk were made with a view to determine whether any change was made in the milk by the different kinds of food eaten by the animal. For this purpoſe ſome were fed with the leaves of maize or Turkey wheat; ſome with cabbage; others with ſmall potatoes; and others with common graſs. The milk of thoſe fed with the Turkey wheat was extremely ſweet; that from the potatoes and common graſs much more ſerous and inſipid; and that from the cabbages the moſt diſagreeable of all. By diſtillation only eight ounces of a colourleſs fluid were obtained from as many pounds of each of theſe milks; which from thoſe who fed upon graſs had an aromatic flavour; a diſagreeable one from cabbage; and none at all from the potatoes and Turkey wheat. This liquid became fetid in the ſpace of a month,

month, whatever ſubſtance the animal had been fed with, acquiring at the ſame time a viſcidity and becoming turbid; that from cabbage generally, but not always, becoming firſt putrid. All of them ſeparated a filamentous matter, and became clear on being expoſed to the heat of twenty-five degrees of Reaumur's thermometer. In the reſiduums of the diſtillations no difference whatever could be perceived. As the only difference therefore exiſting in cow's milk lies in the volatile part, our authors conclude, that it is improper to boil milk either for common or medicinal purpoſes. They obſerved alſo, that any ſudden change of food, even from a worſe to a better kind, was attended by a very remarkable diminution in the quantity of milk. All the reſiduums of the diſtillations yielded, in a ſtrong fire, a yellow oil, an acid, a thick and black empyreumatic oil, a volatile alkali, and towards the end a quantity of inflammable air, and at leaſt a coal remained containing ſome fixed alkali with muriatic acid.

On agitating, in long bottles, the creams from the milk of cows fed with different ſubſtances, all of them were were formed into a kind of half-made butter; of which that formed from the milk from maize was white, firm, and inſipid; that from potatoes was ſofter and more pinguedinous; but that from common graſs was the beſt of all. Cabbage, as in other caſes, gave a ſtrong taſte.

In the courſe of their experiments, it was endeavoured to determine whether butter is actually contained in the cream, or whether it be a chemical production of the operation of churning. They could not find any reaſon abſolutely ſatisfactory on either ſide, but incline to the latter opinion; becauſe when cream is allowed to remain among the milk, and the whole curdled promiſcuouſly, only fat cheeſe, without any butter, is produced. The oily parts cannot be ſeparated into butter either by acids or any other means than churning: even the artificial mixture of oil with the cream is inſufficient for the purpoſe.

The ſerum of milk was reduced by filtration to a clear and pellucid liquor; and, by mixture with fixed alkali, depoſited a portion of cheeſy matter which had been diſſolved in the whey. The ſugar of milk was alſo found in this liquor.

In their experiments upon the milk of various animals, it was found, that the milk of aſſes yielded by diſtillation an inſipid liquor, and depoſited a liquor ſimilar to the lymph of cows milk. It is coagulated by all the acids, but not into an uniform maſs, exhibiting only the appearance of diſtinct flocculi. It affords but little cream, which is converted with difficulty into a ſoft butter that ſoon becomes rancid. It has but a ſmall quantity of ſaccharine particles, and theſe are often mixed with muriatic ſelenite and common ſalt. Goats milk has a thick cream, and agreeable to the taſte; and the milk itſelf may be preſerved longer in a ſound ſtate than any other ſpecies, the ſcum on its ſurface being naturally convertible into palatable cheeſe. It is eaſily made into firm butter, which does not ſoon become rancid, and has a good flavour. The butter-milk contains a large quantity of cheeſy matter, which readily coagulates; but has ſtill leſs ſaccharine matter than that of aſſes. Sheep's milk can ſcarcely be diſtinguiſhed from that of a cow, and eaſily parts with its cream by ſtanding. It is of a yellow colour, an agreeable flavour, and yields a great proportion of butter; but this is not ſolid, and

ſoon

ſoon becomes rancid. Mare's milk is the moſt inſipid and leſt nutritious of any; notwithſtanding which it has been much recommended for weak and conſumptive patients: in which caſes it is probable that it proves efficacious by being more conſonant than any other to the debilitated powers of digeſtion. It boils with a ſmaller fire than any other kind of milk, is eaſily coagulated, and the diſtilled water does not ſoon change its nature. It has but a ſmall quantity of cheeſy matter, and very few oily particles: the cream cannot be made into butter; and the whey contains about as much ſugar as cows or goats milk.

In this memoir our authors remark, that in order to augment the the quantity, as well as to improve the quality, of the milk of animals, they ſhould be well fed, their ſtalls kept clean, and their litter frequently renewed: they ſhould be milked at ſtated hours, but not drained: great attention ſhould alſo be paid to the breed; becauſe inferior cattle are maintained at as great expence as the moſt valuable kinds. No change ought to be made in the food; though, if the milk be employed for medicinal purpoſes, it may be improved by a proper mixture of herbs, &c.

In their experiments on woman's milk, Meſſrs. Parmentier and Deyeux differ ſomewhat from Dr. Clarke. They firſt tried the milk of a woman who had been delivered four months; and obſerved, that after the cream had been ſeparated the other part appeared of a more perfect white, and that it could not be coagulated either by vinegar or mineral acids; which they attributed to a ſuperabundance of ſerum. But they found that in proportion to the age of the milk it was found to be more eaſily coagulable; and this was confirmed by experiments made upon the milk of twenty nurſes. Its coagulability was not increaſed by heat. The cream, by agitation, formed a viſcid unctuous matter, but could not be changed into perfect butter: but they found that it was extremely difficult to determine the proportions of the various component parts in human milk, as it differs remarkably, not only in different ſubjects, but in the ſame ſubject at different times. In a nurſe aged about thirty-two years, who was extremely ſubject to nervous affections, the milk was one day found almoſt quite colourleſs and tranſparent. In two hours after, a ſecond quantity drawn from the breaſt was viſcid like the white of an egg. It became whiter in a ſhort time, but did not recover its natural colour before the evening. It was afterwards found that theſe changes were occaſioned by her having ſome violent hyſteric fits in the mean time.

An account has been lately publiſhed of a method uſed by ſome of the Tartar nations, of preſerving their milk by means of froſt; in which operation great quantities of the ſugar of milk are formed. The account was given by Mr. Fahrig of Peterſburgh, who undertook a journey, by order of the academy of Peterſburgh, among the Mogul tribes who inhabit the country beyond the lake Baikal, on the banks of the river Salenga. Theſe people allow their milk to freeze in large quantity in iron kettles; and, when it is perfectly congealed, they place them over a gentle fire to ſoften the edges of the cake, after which it may be taken out with a wooden ſpatula. They commence theſe operations at the beginning of the cold, when they have milk in the greateſt abundance; after which it may be preſerved with great eaſe throughout the whole winter. Mr. Fahrig

having frequent opportunities of feeing thefe cakes, foon obferved, that the furface of them was covered to a conſiderable depth with a farinaceous powder; and, having eſtabliſhed a dairy upon the ſame plan with thoſe of the Moguls, he found the ſame thing take place with himſelf. This powder was extremely ſweet, and he received platefuls of it from the natives, who uſed it in their food, and ſweetened their other victuals with it. Having cauſed a number of cakes of frozen milk to be conveyed to the top of his houſe where they were directly expoſed to the violent cold, he found that the ſeparation of the ſaccharine powder was greatly promoted by this means. He ſcraped the cakes every week to the depth of two inches, and afterwards ſpread out the powder upon an earthen plate in order to deſtroy the remains of moiſture which might have prevented it from keeping for any length of time. When expoſed in this manner it had a very agreeable and ſtrong ſaccharine taſte; diſſolved in warm water; and when ſtrongly ſtirred by means of a chocolate-ſtick, would at all times produce an excellent and well-taſted milk. Raw milk affords a much larger quantity of this ſaccharine matter than ſuch as has been boiled, or which has had the cream taken off it. Neither muſt the milk be ſuddenly expoſed to the cold before it has loſt its natural heat; for the ſudden contact of the cold drives all the cheeſy and fat part towards the middle, while the external parts conſiſt of little elſe than water. In order to allow the parts of the milk to be all properly mixed together, Mr. Fahrig allowed the milk when newly taken from the cows to cool, and then poured it out into ſhallow kettles.

Our author is of opinion that this method of making milk would be of great ſervice to navigators to ſupply themſelves with milk during long ſea-voyages: and he aſſures us, from his own experience, that it will always ſucceed, if proper attention be paid to it. He is of opinion, however, that all countries are not equally proper for the preparation of this ſaccharine matter: and indeed this ſeems very evidently to be the caſe, as the proceſs appears to be a cryſtallization of the ſaccharine parts of the milk, and a ſeparation of them from the aqueous ones by means of extreme cold. The country in which he made the experiments is one of the moſt elevated in all Aſia; and ſo cold, that, though it lies only in the 50th degree of north latitude, its rivers are frozen up for ſix months of the year. A very dry cold wind alſo prevails throughout almoſt the whole year; and the dry winds generally come from the north, being almoſt always preceded by a warm wind from the ſouth, which blows for ſome time. The dry rarefied air increaſes the evaporation from the ice-cakes, and leaves nothing but the ſaccharine or pure conſtituent parts of the milk, which with the addition of water can always recompoſe the fluid.

Milk makes an innocent and efficacious forcing for the fining down of all white wines, arracks, and ſmall ſpirits; but is by no means to be uſed for red wines, becauſe it diſcharges their colour. Thus, if a few quarts of well-ſkimmed milk be put to a hogſhead of red-wine, it will ſoon precipitate the greater part of the colour, and leave the whole nearly white; and this is of known uſe in the turning red wines, when pricked, into white; in which a ſmall degree of acidity is not ſo much perceived.

Milk

Milk is, from this quality of diſcharging colour from wines, of uſe alſo for the whitening of wines that have acquired a brown colour from the caſk, or from having been haſtily boiled before fermenting; for the addition of a little ſkimmed milk, in theſe caſes, precipitates the brown colour, and leaves the wines almoſt limpid, or of what they call a *water-whiteneſs*, which is much coveted abroad in wines as well as in brandies.

HOOLE's TRANSLATION of LEEUENHOEK, No. II.

Of the Maggot or Caterpiller called the Wolf.

HAVING, as I hope, by my obſervations on the weevil, (ſee p. 173,) convinced mankind, that it is propagated in the ordinary way of generation, I have ſince employed myſelf in the examination of that inſect or maggot which our bakers and corn-dealers name *de Wolf*, i. e. "the wolf."

This inſect is not much known in England among the country people, for, the tranſlator having procured from an importer of corn a ſample of Pruſſian wheat infected with it, and ſhewn it to ſeveral farmers, the appearance ſeemed new to them, nor could they aſſign to the animal any name in Engliſh. But to the Dutch, who have always been great importers and exporters of corn, it ſeems to have been familiar, and the author's remarks on this ſubject may be well worthy the attention of our Engliſh merchants.

This creature is a very ſmall white maggot, provided with two red pincers, or organs like teeth, placed in the fore part of its head, by which it not only feeds on and conſumes wheat and other grain, but alſo can perforate or gnaw holes in wood. The common opinion is, that it is produced from corruption, or elſe from what ſome call a blight. But, in order to refute this vulgar error, I procured a box of wheat, in which this inſect abounded, that I might diſcover the real manner of its propagation.

Upon inſpecting this wheat, I found, that one ſingle maggot had ſtuck or faſtened together from five, to ſix, ſeven, or even eight, grains of wheat, in one of which itſelf was concealed, and that moſt of the other grains were hollowed or ſcooped out in the middle; and it ſeems to me that this maggot is much more pernicious than the weevil, becauſe it ſcatters a great quantity of its excrements in the ſhape of white round balls, which are very large in proportion to the ſize of its body.

Moreover, this maggot has in the anterior or fore part of its head an organ, or inſtrument, through which it continually ſpins an exceeding fine thread, which thread it fixes to every ſubſtance it approaches. By this means its body is always ſupported ſo that it cannot fall, and in a clean glaſs it can move from place to place, being ſuſpended by this thread, and by this thread alſo it connects or binds the grains of wheat together.

Some of this wheat I put into a glaſs tube, about the ſize of a finger, and a foot in length, cloſing each end with a good ſtopper, and the reſt of the wheat I kept in a wooden box. Towards the end of the ſummer, I obſerved ſeveral of the maggots forſaking the wheat, and faſtening themſelves to the glaſs, and others of them I ſaw creeping about among my papers, and I found the box, in which

I had put them, perforated in two places, through which many of them had eſcaped. I alſo ſaw the ſtopper to the glaſs tube gnawed into, as deep as the thickneſs of a finger, and upon taking it out, I found that eight or ten of the maggots had crept into it; upon which I placed them again in the glaſs tube, with the grains of wheat, and, ſtopping the orifices with a cork, I covered the cork on the outſide with ſealing-wax, to prevent the maggots again eſcaping, but at the ſame time I contrived apertures, that they might not be deprived of air, but ſo ſmall as not to permit their eſcape.

About the ſame time that I was employed in theſe obſervations, I viſited a granary infeſted with this inſect, and ſaw the maggots, in great numbers, creeping up the walls; whence I concluded, that in like manner as the maggots in the glaſs tube quitted the wheat, and lodged themſelves in the ſtoppers, ſo in the granary they concealed themſelves in the linings and beams, until their transformation into flying inſects ſhould be completed. And I was confirmed in this opinion by obſerving the granary to have been ſo perforated, or eaten into, by theſe maggots, that not a finger's breadth was left untouched by them.

I alſo obſerved that great part of the ſtopper which was within the glaſs tube, was gnawed or reduced to powder, and many chinks or crannies formed in it; and, though the maggots endeavoured to conceal themſelves within the ſtopper, yet three of them remained in the glaſs, in which they lay quiet the whole winter, and they were ſo little covered with their web or thread, that, with the microſcope, I could diſcover them move their heads. On the 29th of the April following, I ſaw them begin to aſſume a reddiſh colour, and to be ſomewhat contracted in length; the next day the redneſs increaſed, and they ſeemed to me to be turned into aurelias. At the ſame time, upon examining the wheat, which was kept in the box, and had been full of the maggots, I found that they had all eſcaped through the holes perforated by them in the box.

On the 23d of May, the aurelias before-mentioned, had become of a red colour, and the next day I ſaw a flying inſect, called a moth, fluttering about the glaſs tube. This had proceeded from one of the aurelias, which had been the chief ſubject of my obſervations; and I ſaw lying near it, a pelliele, or little ſkin, which had been the caſe or ſheath in its aurelia ſtate. Two days before I diſcovered this moth, I had obſerved ſeveral of the ſame winged inſects flying about my ſtudy, two of which I killed, and upon examining them by the microſcope, I found them to be formed in the ſame manner with this in the glaſs, ſo that I was convinced they had proceeded from ſome of the maggots which had eſcaped out of the box. And on the 25th of May I ſaw two more moths come out of the ſtopper to the tube, leaving their ſhells or caſes hanging to it.

On the ſame 25th of May, I went to the granary, where, the preceding autumn, I had ſeen the maggots before-mentioned creeping up the walls, and there I ſaw a number of moths, ſome clinging to the wall, and others flying about. I had brought with me ſix glaſs tubes; and, as it was eaſy to diſtinguiſh the males from the females, the former being ſmaller than the latter, I put in each of theſe glaſſes ſome of both ſexes. At my return home, I diſſected three of theſe females, and, by the moſt accurate reckoning I could make, I found in each of their bodies upwards of fifty eggs. At another

time,

time, I judged that I took out of another female moth, above seventy eggs. These eggs were exactly the shape of hens eggs, but no larger than small grains of sand. The rest of the moths which I had brought from this granary, and kept alive, laid many eggs, and one of them produced to the number of seventy.

I next considered, whether the moths, which thus propagate the pernicious insect I am treating of, might not by some means be destroyed in the granaries, so as to prevent their propagation. For this purpose I took a round glass vessel, large enough, as I supposed, to hold six pints of water, and in it I put eight living moths newly taken. In the orifice of this vessel I set fire to the fourth part of a grain of sulphur; and, as soon as the moths began to feel the vapour or smoke of the sulphur, they fluttered about the glass with great violence, though but for a short time, for they all fell to the bottom, and, after a little motion in their feet, they died. Four hours afterwards, I took them out of the glass, and put into it some fresh ones alive, in order to repeat the experiment; but, while I was preparing to burn the sulphur, I saw them all lie dead, they having been killed with the bare odour of the sulphur which had been left in the glass. From the size of this glass, I computed what quantity of sulphur would be requisite to fumigate a granary twenty-four feet long, sixteen broad, and eight feet high; and I reckoned that half a pound would be sufficient for the purpose.

After this I fumigated a granary, in which were eight loads of wheat, and a great number of moths flying about. For this purpose I took two pieces of sulphur, containing about a quarter of a pound, prepared in the same manner as is done by wine-merchants or coopers, to fumigate their wine casks. These pieces of sulphur I suspended by a brass wire, in a tall earthen vessel, with a narrow top, and placed the vessel in an earthen dish, to prevent any danger of fire. This apparatus I set in the middle of the wheat, and, as soon as the sulphur began to burn, I retired out of the granary and shut the door. In a large granary two or three of these vessels might be used. Two days afterwards, I visited the granary, and then I saw several moths still clinging to the wall and beams, but before the fumigation I believe there were ten times as many; and I accounted for these moths being found alive, by reason that many of the panes of glass in the windows were broken, through which much of the smoke of the sulphur had escaped; or else that the moths which I now saw had come out of their aurelia state after the fumigation was over; for I am well assured, that so long as the moths are inclosed in their aurelia case, or covering, the smoke of sulphur cannot do them any injury. Therefore it will be necessary for those who may chuse to fumigate their granaries in the manner I have recommended, to begin the operation as soon as ever the moths appear, that they may be prevented laying their eggs, and also to continue the use of it some days, indeed as long as any moths are to be seen, because these creatures do not all come out of their aurelia state at the same time. The expence of fumigating is no object, for a pound of sulphur may be bought for a trifle, and it is in no sort injurious to the wheat, nor is it prejudicial to the health of any person, but rather salubrious. Towards the end of summer, when the maggots quit the wheat, and creep up the walls, they may easily be swept down and destroyed; for this insect is a very tender animal, and soon killed.

And,

And, theſe precautions being obſerved, very few moths will be ſeen the following year.

Some of the eggs laid by theſe moths I put in glaſſes by themſelves, which I carried about in my pocket; others of them I placed in my ſtudy; and I obſerved that thoſe which I carried about me were, by the heat of my body, much ſooner hatched than thoſe which were in my ſtudy, for theſe latter were ſixteen days before the maggots crept out of them; but at ſeven days end thoſe in the former made their appearance. The fore part of this maggot is provided with ſix feet, which ſometimes can be diſcerned when the animal lies flat on its belly; in the hind part are various organs aſſiſting in its motion. As I obſerved ſome of theſe young maggots to be dying, I put ſome grains of wheat into the glaſs, and ſoon afterwards the living ones diſappeared, whence I concluded that they had found their way into the wheat, and in three or four days time I ſaw their excrements ſcattered about the glaſs.

The moths I have been deſcribing are very pretty objects to behold, the wings, which are four in number, being white, ſprinkled all over with black ſpots; and on examining them by the microſcope I found that this whiteneſs proceeded from the white feathers on the wings, and that the black ſpots were cauſed by other feathers which were black at the edges. Some thouſands of theſe feathers I ſaw ſticking to the glaſſes in which I kept the moths, which, in their fluttering againſt the glaſs or one another, had been rubbed off their wings and other parts of their bodies; and to the naked eye, exhibited the appearance of a vapour or ſmoke on the glaſs. Though I examined ſome thouſands of theſe feathers, they were all ſo differently formed, that I cannot ſay I ſaw two exactly alike. At their broad ends, they are tinged with black, and, when ſeveral of them lie cloſe together, they exhibit a black ſpot; others are tranſparent, but when lying one on another they produce the whiteneſs I have mentioned. All of them, although ſo very minute, have quills like the feathers of birds, by which they are fixed or rooted in the membrane that forms the wing, and ſo completely cover it that it cannot be ſeen. The feathers which cover the edges of the wings are much longer than the others, and of different ſhapes.

This maggot, which in Holland is called the wolf, is not only miſchievous by devouring corn, but it is of that ſpecies which is found in houſes, and gnaws holes in wood, alſo in boxes and books, and likewiſe hides itſelf in woollen garments, eating holes in them, and at length becomes a flying inſect, or a moth. This moth, of itſelf, is very innocent; for, while in that ſtate, it does not, as I could diſcover, take any food, but, if not deſtroyed in time, one female may produce ſeventy maggots, for out of upwards of ſeventy eggs, laid by one moth, I only ſaw one barren; and in three others of the eggs, I could diſcern the maggots lying dead, by reaſon, as I ſuppoſe, that they could not break the ſhells.

I heard it affirmed, by a corn-dealer, in ſupport of his opinion that theſe maggots are produced in wheat ſpontaneouſly, that they are more rarely found in old wheat than in new; to which I gave for anſwer, that, when firſt hatched, they are very ſmall and tender, ſo that it is difficult for them to pierce the huſk of old wheat, the ſame being very dry and hard, and conſequently many of them die for want of nouriſhment. This I fully proved by experiment; for

I had

I had three glaſſes ſtanding in my ſtudy, in one of which there were more than ſixty maggots newly hatched: in this glaſs I put ſome grains of wheat, one of which was broken, or ſplit down the middle, and this alone was eaten into, the others remaining uninjured, and all the maggots, except one or two, died; all which, I had no doubt, proceeded from this, that theſe grains of wheat were remarkably dry and hard, having been kept for two or three years in a box in my ſtudy: and in another of the glaſſes, wherein I obſerved the maggots creeping about on the ſurface of the wheat, without being able to penetrate it, I cut ſeveral of the grains in pieces, and by this means many of the maggots were kept alive.

While I was examining the granary before-mentioned, I ſaw many very minute animalcules, no bigger than grains of ſand, creeping up the walls. Some of theſe I brought home with me in glaſſes, and I obſerved them to couple together, and to lay exceſſively minute eggs, which eggs, after ſome time, produced animalcules formed like the parents. So that it appears theſe little creatures propagate their like without undergoing any ſuch change as is obſerved in fleas, moths, flies, and many other inſects.—I think, however, it is fully proved, that no living creature is produced from corruption or putrefaction. Indeed, can any man in his ſober ſenſes imagine, that the moth, of which I have given the deſcription, which is fitly provided by nature with the means to propagate its ſpecies, furniſhed with eyes exquiſitely formed, with horns, with tufts of feathers on its head, with wings covered with ſuch multitudes of feathers, all of different ſhapes, and theſe exactly covering the wings in every part; can this moth, I ſay, adorned with ſo many beauties, be produced from corruption? For, in a word, in this little creature, contemptible as it ſeems to us, there ſhines forth ſo much perfection and ſkill in the formation, as to exceed what we obſerve in larger animals.

[This work is embelliſhed with Engravings from the original Plates, and others added by the Tranſlator.]

ACCOUNT OF THE ISLAND OF ST. BARTHOLOMEW.

ST. BARTHOLOMEW is a ſmall iſland belonging to Sweden, in the Weſt Indies, lying at a little diſtance from St. Euſtatia and St. Chriſtopher. A Swediſh writer gives the following account of it in a publication entitled, "A Voyage to the Iſlands of St. Martin, St. Euſtantia, and St. Chriſtopher, undertaken at the Expence of the Academy of Sciences at Stockholm."

The iſland of St. Bartholomew is about four leagues in length, and a league in breadth. Although it abounds with mountains, it is entirely deſtitute not only of lakes and rivers, but even of ſprings. The inhabitants preſerve the rain-water in ciſterns; but are nevertheleſs obliged to procure water from St. Chriſtopher, for which they often pay twelve livres per ton.

The only port in the iſland is Le Carenage, near which ſtands Guſtavia, the ſole town in the colony. This port is ſituated on the weſtern ſide, and has excellent moorings. Veſſels, indeed, that draw more than nine feet, cannot enter it; but it will contain an hundred veſſels, an advantage that is not to be found either at St. Euſtatia or St. Chriſtopher. The bay of Colombier is deep enough

for large ſhips; but it has no town on its banks. Le Carenage had no town belonging to it before the iſland was in poſſeſſion of Sweden.

The climate is in general healthy; but at certain times of the year the weather is variable. During nine months it is very pleaſant; for, though the ſun is burning, there is generally a breeze that cools and purifies the air, and is extremely refreſhing. If it were not for this almoſt conſtant breeze, the climate would be unhealthy. Hurricanes prevail from the middle of July till the middle of October, during which time the wind changes ſo rapidly as to viſit every point of the compaſs within ten or twelve minutes.

The population of the iſland is much encreaſed ſince it belonged to Sweden. At Guſtavia are to be found Swedes, Engliſh, French, Danes, Americans, and Jews. With the exception of a very few, the planters are French. The food of the negroes here is ſo ſcanty as, in many caſes, to be inſufficient for nouriſhment; and their clothing is wretched; indeed it can ſcarcely be called ſuch, leaving the body expoſed to all the evils it can encounter from nakedneſs, and, among the reſt, to the juice of the mancenillier, which corrodes and burns the fleſh like aqua-fortis.

The ſtature of the inhabitants varies according to the different nations from which they are ſprung. The natives of the country are ſtrong and robuſt, but more eſpecially the men. The women are comparatively ſlight and feeble, which is the effect of the indolent lives they lead. They are never employed in any kind of labour, and remain in a ſitting poſture during the greater part of the day. If any thing happens to fall from their hand, they call a ſlave to take it up; and ſlaves are conſtantly employed to keep off the flies and inſects that would incommode them. The natives are very little ſubject to illneſs, and generally live to an old age.

Freſh proviſions, flour, dried fiſh, and ſalted meat, are brought from the continent of America to this iſland: and the ſea furniſhes it with fiſh of varies kinds. They have wheaten bread here, beſides a kind of bread peculiar to the country.

The houſes are made of wood, and there are but a few that have the lower part of ſtone. Some of them are raiſed upon four ſtone pillars, ſo that the wind can paſs underneath. The windows are ſimply openings in the wall, with window-ſhutters, or lattices.

St. Bartholomew, as well as the neighbouring iſlands, is a magazine for American and European merchandize. Veſſels arrive daily to deliver their cargoes, and take in others. The plantations that abound the moſt there, are thoſe of cotton, which ſucceed very well. The practice of the planters is to ſow four or five grains of the ſeed in a hole, and when the plants appear, they pluck all up but the ſtrongeſt. After the firſt crop they cut down the branches, and the plant puſhes out new ſhoots which bear like the original ſtem; but, after the ſecond crop, the ſeeds muſt be again ſown. Aloes are planted round the plantations for fences; they are placed in a ſtraight line, and as cloſe together as poſſible. When theſe fences have arrived at maturity, they are impenetrable, either by men or animals. The aloe grows to a great height, and ſpreads very much, the leaves being often from four to five feet in length. When the aloe has bloſſomed and borne fruit, it dies; but the planters take care to prevent any void in the fence.

Law-

Law-ſuits, in general, are determined, in this iſland, according to the Swediſh code. There are caſes, however, in which the cuſtom of India is followed. As to the puniſhments inflicted on ſlaves, almoſt every proprietor has a different method. The ſlaves ſcarcely receiving nouriſhment to keep them alive, overburthened with labour, and daily receiving ſtrokes of the whip, frequently deſert; in which caſe, the proprietor has a right to inflict diſcretionary puniſhment on the ſlave he recovers. On ordinary occaſions, the culprit is laid upon his face on the ground, ſtripped quite naked, with his hands tied to the wheels of a cannon, and his feet extended and bound to two poſts. He who inflicts the puniſhment, is armed with a whip from twelve to fourteen feet in length, but with a very ſhort handle; he places himſelf at ſome diſtance, and at every ſtroke, produces a noiſe like the report of a piſtol; and long ſtripes of ſkin, and frequently of the fleſh itſelf, are torn off by the whip. The puniſhment extends to thirty, fifty, and ſometimes an hundred, laſhes.

The negroes excel in dances, which conſiſt of a great variety of figures and movements of the body, that is difficult, and almoſt impoſſible, for Europeans to imitate; even Creoles attain them with great difficulty, while the negroes eaſily learn European dances. On the laſt Sunday of every month battles are fought with cocks, which occaſion conſiderable betting.

The coins uſed on this iſland are the moidore and piaſtre; they have alſo a fictitious money, called the piſovett, which is worth ſomething more than two-thirds of a piaſtre, and a ſmall ſilver coin called a dogg, and a coin called a bett, of the value of ſix doggs. The piaſtres are the moſt in uſe. The inhabitants frequently cut them into two or four parts. When they are divided into four pieces, two of them are always larger than the others; the larger are of the value of three betts, and the ſmaller of two betts and a half.

The author finiſhes his account with a very long and circumſtantial catalogue of the natural productions of the iſland, which are much more numerous than would be imagined.

OF THE INTRODUCTION OF GARDEN-FLOWERS.

MOST of the flowers introduced into our gardens, and now cultivated either on account of their beauty, or the pleaſantneſs of their ſmell, have been procured from plants which grew wild, and which have been changed, or, according to the opinion of floriſts, improved, by the art of the gardener. The greater part of them however came originally from diſtant countries, where they grow, in as great perfection as ours, without the aſſiſtance of man. Though we often find mention of flowers in the works of the Greeks and the Romans, it appears that they were contented with thoſe only which grew in their neighbourhood. The modern taſte for flowers came from Perſia to Conſtantinople, and was imported thence to Europe, for the firſt time, in the ſixteenth century. At any rate, we find the greater part of the productions of our flower-gardens were conveyed to us by that channel. Cluſius and his friends, in particular, contributed very much to excite this taſte; and the new plants brought from both the Indies by the travellers who then continued ſtill more frequently to viſit theſe countries, tended to increaſe it. That period alſo produced ſome ſkilful gardeners, who carried on a conſiderable

trade with the roots and ſeeds of flowers; and theſe likewiſe aſſiſted to render it more general. Among theſe were John and Veſpaſian Robin, gardeners to Henry IV. of France, and Emanuel Sweert, gardener to the Emperor Rodolphus II. from whom the botaniſts of that time procured many rarities, as appears from different paſſages of their works. As this taſte for flowers prevails more at preſent than at any former period, a ſhort hiſtory of ſome of the objects of it may not be diſagreeable, perhaps, to many of our readers.

Simon de Tovar, a Spaniſh phyſician, brought the tuberoſe to Europe before the year 1594 from the Eaſt Indies, where it grows wild in Java and Ceylon, and ſent ſome roots of it to Bernard Paludanus, who firſt made the flower publicly known, in his annotations on Linſchoten's voyage. The full tuberoſes were firſt procured from ſeed by one Le Cour, at Leyden, who kept them ſcarce for ſome years, by deſtroying the roots, that they might not become common. The propagation of them in moſt countries is attended with difficulties; but in Italy, Sicily, and Spain, it requires no trouble; and at preſent the Genoeſe ſend a great many roots to England, Holland, and Germany. The oldeſt botaniſts claſſed them among the hyacinths, and their modern name *polianthes tuberoſa* was given them by Linnæus in Hortus Cliffortianus.

The auricula, *primula auricula*, grows wild among the long moſs covered with ſnow, on the confines of Switzerland and Steyermark, whence it was brought to our gardens, where, by art and accident, it has produced more varieties than any other ſpecies of flower. We do not know who firſt tranſplanted it from its native ſoil. Pluche ſays only that ſome roots were pulled up by Walloon merchants, and carried to Bruſſels. This much is certain, that it was firſt cultivated with care by the Flemings, who were very ſucceſsful in propagating it. Profeſſor Weiſmantel, who deſerves to be ranked amongſt the principal writers on flowers, ſays, that the auricula was deſcribed and celebrated by Ovid, Pliny, and Columella. Yet the botaniſts, even of the laſt century, who ſearched for plants in the works of the ancients with great diligence, and who took the liberty of making very bold aſſertions, were not able to find any name that would correſpond with the auricula; for the conjecture of Fabius Columna, that it is the *aliſma* of Dioſcorides, is highly improbable, as that Grecian author extols his plant, which was fond of water, on account of its medicinal virtues only. In the time of Cluſius, moſt of the varieties of the auricula were ſcarce.

The common fritillary, or chequered lily, *fritillaria meleagris*, was firſt obſerved in ſome parts of France, Hungary, Italy, and other warm countries, and introduced into gardens about the middle of the ſixteenth century. At firſt it was called *lilium variegatum*; but Noel Capperon, an apothecary at Orleans, who collected a great many ſcarce plants, gave it the name of *fritillaria*, becauſe the red or reddiſh-brown ſpots of the flower form regular ſquares, much like thoſe of a cheſs-board. It was firſt called *meleagris* by Dodonæus, becauſe the feathers of that fowl are variegated almoſt in the ſame manner.

The roots of the magnificent crown imperial, *fritillaria imperialis*, were about the middle of the ſixteenth century brought from Perſia to Conſtantinople, and were carried thence to the emperor's garden at Vienna, from which they were diſperſed all over Europe. This

flower

flower was firſt known by the Perſian name *tuſac*, until the Italians gave it that of *corona imperiale*, or crown imperial. It has been imagined that the figure of it is to be found repreſented on coins of Herod, and that, on this account, it has been conſidered as the lily ſo much celebrated in the ſcripture.

The Perſian Lily, *fritillaria Perſica*, which is nearly related to it, was made known almoſt about the ſame time. The bulbs or roots were brought from Suſa to Conſtantinople, and for that reaſon it was formerly called *lilium Suſianum*.

African and French marygolds, *tegetes erecta* and *patula*, were, according to the account of Dodonæus and others, brought from Africa to Europe, at the time when the Emperor Charles V. carried his arms againſt Tunis. This however is improbable; for theſe plants are indigenous in South America, and were known to botaniſts before that period under the name of *caryophyllus Indicus*, from which is derived the French appellation *oeillet d'Inde*. Codrus calls them, from their native country, *tanacetum Peruvianum*.

Among the moſt beautiful ornaments of our gardens, is the belladonna lily, *amaryllis formoſiſſima*, the flower of which, compoſed of ſix petals, is of a deep-red colour, and in a ſtrong light, or when the ſun ſhines upon it, has an agreeable yellow luſtre like gold. The firſt roots of it ever ſeen in Europe were procured in 1593, on-board a ſhip which had returned from South America, by Simon de Tovar, a phyſician at Seville. In the year following, he ſent a deſcription of the flower to Cluſius; and as he had at the ſame time ſent ſome roots to Bernard Paludanus, and Count d'Aremberg, the former ſent a dried flower, and the latter an accurate drawing of it, to Cluſius, who publiſhed it in 1601. One of the Robins gave in 1608 a larger and more correct figure, which was afterwards copied by Bry, Parkinſon, and Rudbeke; but a complete deſcription, with a good engraving, was publiſhed in 1742, by Linnæus, who in 1737 gave to that genus the name by which they are known at preſent. Sweert, Bauhin, and Rudbeke, are evidently miſtaken in aſſigning the Eaſt Indies as the original country of this plant; and Broke, who was not a botaniſt, but only a floriſt, is equally wrong in making it a native of the Levant. Tover received it from South America, where it was found by Plumier and Barrere, and at a later period by Thiery de Menonville alſo. At firſt it was claſſed with the narciſſus, and it was afterwards called *lilio-narciſſus*, becauſe its flower reſembled that of the lily, and its roots thoſe of the narciſſus. It was named *flos-Jacobæus*, becauſe ſome imagined that they diſcovered in it a likeneſs to the badge of the knights of the order of St. James in Spain, whoſe founder, in the fourteenth century, could not indeed have been acquainted with this beautiful amaryllis.

Another ſpecies of this genus is the Guernſey lily, *amaryllis Sarnienſis*, which in the magnificence of its flower is not inferior to the former. This plant was brought from Japan, whence it was found, by Kæmpfer, and alſo by Thunberg, who viſited that country about twenty years ago. It was firſt cultivated in the beginning of the ſeventeenth century in the garden of John Morin, at Paris, where it blowed, for the firſt time, on the 7th of October, 1634. It was then made known by Jacob Cornutus, under the name of *narciſſus Japonicus flore rutilo*. After this it was again noticed by our countryman Ray, in 1665, who called it the *Guernſey lily*, which name it ſtill very

properly bears. A ſhip returning from Japan was wrecked on the coaſt of Guernſey, and a number of the bulbs of this plant, which were on-board, being caſt on-ſhore, took root in that ſandy ſoil. As they ſoon increaſed and produced beautiful flowers, they were obſerved by the inhabitants, and engaged the attention of Mr. Hatton, the governor's ſon, whoſe botanical knowledge is highly ſpoken of by Ray, and who ſent roots of them to ſeveral of his friends who were fond of cultivating curious plants. Of this elegant flower Dr. Douglaſs gave a deſcription and figure in a ſmall treatiſe publiſhed in 1725, which is quoted by Linnæus in his Bibliotheca, but not by Haller.

Of the numerous genus of the ranunculus, floriſts, to ſpeak in a botanical ſenſe, have obtained a thouſand different kinds; for, according to the manner in which they are diſtinguiſhed by gardeners, the varieties are infinite, and increaſe almoſt every ſummer, as thoſe with half-full flowers bear ſeed which produce plants that from time to time divide themſelves into new kinds that exhibit greater or uncommon beauties. The principal part of them, however, and thoſe moſt eſteemed, were brought to us from the Levant. Some were carried from that part of the world ſo early as in the time of the cruſades; but moſt of them have been introduced into Europe from Conſtantinople ſince the end of the ſixteenth century, particularly the Perſian ranunculus, the varieties of which hold at preſent the firſt rank. Cluſius deſcribes both the ſingle and the full flowers as new rarities. This flower was in the higheſt repute during the time of Mahomet IV. His grand vizir, Cara Muſtapha, well known by his hatred againſt the Chriſtians and the ſiege of Vienna in 1683, wiſhing to turn the ſultan's thoughts to ſome milder amuſement than that of the chace, for which he had a ſtrong paſſion, diverted his attention to flowers; and, as he remarked that the emperor preferred the ranunculus to all others, he wrote to the different pachas throughout the whole kingdom to ſend him ſeeds or roots of the moſt beautiful kinds. The Pachas of Candia, Cyprus, Aleppo, and Rhodes, paid moſt regard to this requeſt; and the elegant flowers which they tranſmitted to court were ſhut up in the ſeraglio as unfortunate offerings to the voluptuouſneſs of the ſultan, till ſome of them, by the force of money, were at length freed from their impriſonment. The ambaſſadors from the European courts, in particular, made it their buſineſs to procure roots of as many kinds as they could, which they ſent to their different ſovereigns. Marſeilles, which at that period carried on the greateſt trade to the Levant, received on this account theſe flowers very early, and a perſon there, of the name of Malaval, is ſaid to have contributed very much to diſperſe them all over Europe.

PROGRESS OF THE POPULATION OF LONDON PREVIOUS TO THE TIME FROM WHICH THE BILLS OF MORTALITY COMMENCED.

THE time of the foundation of London is naturally involved in obſcurity: it moſt probably muſt look for its origin to a few miſerable huts of the firſt inhabitants of the iſland, whom the advantages of the ſituation drew together, and who little thought, when they reared their rude habitations, that the infant villages would,

would, in time, become the metropolis of England, and one of the moſt conſiderable cities of the world. If it exiſted at all at the time of the invaſion under Julius Cæſar, it was too inſignificant to attract his notice; but within a century from that time, it became a place of ſome conſequence, and probably of conſiderable extent; for in the year 62, Suetonius found his army, which is ſaid to have conſiſted of 10,000 men, inſufficient to defend it, and was obliged to abandon the city to Boadicea, by whom it was reduced to aſhes, and all the inhabitants maſſacred.

The local advantages which had induced the firſt inhabitants to make choice of this ſpot, had the ſame effect upon others, and the new ſettlers continued gradually to increaſe ſo much, that after the ſettlement of the Eaſt Saxons it became the chief town of their kingdom. In the year 798, London, with many of its inhabitants, was deſtroyed by fire; and in the next century it ſuffered much from the depredations of the Danes till the year 886, about which time it was repaired by Alfred, who afterwards made it the capital of all England. Under the care of this monarch, it was, in 895, ſo far recovered from the devaſtations of the Danes, as to be capable of ſending out forces againſt them. In 982, the city was again deſtroyed by fire; but in eleven years after this calamity, it was able to ſend out a fleet againſt the Danes, and to defend itſelf effectually when beſieged by them. From this period to the time of the Norman invaſion, it was frequently attacked by the Danes, but without ſucceſs; and, as this cauſed the people of the neighbouring villages to conſider it as a place of ſecurity, it muſt have contributed to increaſe the number of its inhabitants; the growth of the city was, however, frequently checked by the ravages of fire, particularly in 1077, 1087, and 1092, when it ſuffered ſeverely from that calamity; to which, like all other large cities conſiſting of ill-conſtructed wooden houſes, it was in continual danger of becoming a prey.

About the year 1140, according to Peter of Blois, London contained 40,000 inhabitants. If the accounts of W. Fitz Stephen were to be depended on, the population muſt have been much greater; but, as he appears to have paid little attention to correctneſs into her particulars, his aſſertions in this reſpect may be juſtly doubted. Conſidering the number juſt mentioned as the neareſt to the truth that can be now aſcertained, it will appear, that in the courſe of the next two hundred years, notwithſtanding ſome ſevere calamities, the population muſt have increaſed very conſiderably, otherwiſe the loſs of more than 50,000 inhabitants, who were carried off by the plague which broke out towards the end of the year 1348, would have entirely depopulated the city. The privileges granted by Henry III. and ſeveral of his ſucceſſors, probably allured great numbers from the country, and from foreign parts, to ſettle in London; and, had it not been continually ſubject to peſtilential diſeaſes, the increaſe of inhabitants muſt have been very rapid.

In 1407, about 30,000 perſons are ſaid to have died of the plague in London, and nearly as many in 1478 by the ſame diſorder. In 1485, the epidemic diſeaſe called the ſweating ſickneſs raged with violence; and in 1499, the plague again ſwept away 30,000 perſons. The frequent returns of this terrible ſcourge ſeem to warrant a ſuſpicion, that in ſome inſtances it was engendered by the filthy and confined ſtate of the metropolis, which at leaſt muſt have conſiderably

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encreafed its malignity, and prolonged its continuance. At length fome ſteps were taken for putting a few of the principal ſtreets into a better condition; in 1533, an act was paſſed for paving the high-ſtreet from Holborn-bridge to Holborn-bars; the ſtreets of Southwark were, by the ſame ſtatute, alſo directed to be paved, and every perſon was to maintain the pavement before his own ground, or forfeit ſixpence for every ſquare yard. A ſimilar act was paſſed in 1541, directing the following ſtreets to be paved, viz. the ſtreet leading from Aldgate to Whitechapel church; the upper part of Chancery-lane; the way leading from Holborn-bars weſtward, towards St. Giles's in the Fields, as far as there were any houſes on both ſides of the ſtreet; Gray's-Inn-lane; Shoe-lane, and Fetter-lane; which are all deſcribed as "very foul, and full of pits and ſloughs; very perilous and noiſome, as well for the king's ſubjects on horſeback, as on foot, and with carriages." Another act was paſſed about three years after, for paving ſeveral other ſtreets in the out-parts of London; and in each inſtance it was done, not by a rate or aſſeſſment, but by obliging the owners of the lands and tenements adjoining the ſtreets to pave the length of their property, and put it annually in repair. This attention to the ſtate of the ways ſeems to indicate an increaſe of the traffic and wealth of the city, and therefore probably alſo of the number of inhabitants.

From the map of London about the year 1558, republiſhed by Mr. Nichols, in his Collection of the Progreſſes and public Proceſſions of Queen Elizabeth, it appears that at that time there were few houſes at Charing-croſs; and, though the Strand was built on each ſide, open fields extended behind it from St. James's Park to Holborn, almoſt down to Chancery-lane. At Moorgate there were but few houſes without the city wall, or in the now populous pariſh of Shoreditch; ſtill leſs it Spitalfields, Bethnall-green, &c. Though ſo much leſs extenſive than at preſent, it appears to have been far more unhealthy, as it was ſeldom long free from the plague, in a greater or leſs degree. In 1563, there died in the city and liberties, containing 108 pariſhes, of all diſeaſes, 20,372 perſons, of which number 17,404 died of the plague; and in the eleven out-pariſhes, there died of all diſeaſes 3288 perſons, of whom 2732 died of the plague; in the whole, therefore, there died of the plague 20,136, and of other diſorders 3524: the latter number, however, muſt have been much leſs than the uſual number of deaths in the years free from the plague; from which it may be preſumed, that the whole number of inhabitants at this period could not be leſs than 110,000. In 1564 the plague ceaſed; and, though it has always been found that the population of London has recovered very ſpeedily from the effects of this calamity, its reſtoration muſt, in this inſtance, have been conſiderably promoted by the ſettlement of many of the French and Flemiſh Proteſtants, who took refuge in this country, and, by the improvements they introduced in many of the arts and manufactures, contributed much to draw additional hands to London and other manufacturing towns. In 1567, there were found, on enquiry, to be 4851 ſtrangers of all nations, in London; and, on a ſimilar inquiſition, taken in 1580, of all foreigners reſiding in the city and liberties, they were found to be 6492. It appears that at this time the ſuburbs of the city were increaſing conſiderably, as it was thought neceſſary to iſſue a proclamation, forbidding any build-

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ings to be erected on new foundations, within three miles of the city gates, and ordering that only one family ſhould inhabit each houſe.

On the plague breaking out again in March, 1592, a regular account of the number of deaths was begun; and in 1594 the weekly bills of mortality were firſt publiſhed, probably to convince the people of the decreaſe of the plague, as they were diſcontinued as ſoon as it entirely ceaſed; the number of perſons that died of the plague in 1592, was 11,503; and in the following year, 10,662. Its re-appearance ſeemed to the parliament to juſtify the apprehenſions that had been entertained of the ill conſequences of the increaſe of the metropolis; they accordingly enacted, that no new buildings ſhould be erected within three miles of London or Weſtminſter, nor any one dwelling-houſe converted into more; that there ſhould be no inmates or under-ſitters, and that commons or waſte lands lying within three miles of London ſhould not be incloſed.

On the plague increaſing again in 1603, another proclamation was iſſued, for more effectually reſtraining the increaſe of the city; and the publication of the bills of mortality was renewed, which has been regularly continued ever ſince. Theſe bills, though very deficient and incorrect, are almoſt the only documents from which any eſtimate of the population of London can be formed; but, though they are too incomplete to furniſh the means of determining with accuracy the whole number of inhabitants, they ſhew with much greater certainty the increaſe or decline of the population, from the period of their eſtabliſhment to the preſent time.

HOOLE's TRANSLATION OF LEEUWENHOEK, No. III.

OF THE GARDEN SPIDER.

THE following obſervations were made on thoſe kinds of ſpiders which are found in gardens, where they fix their webs to vines, herbs, and ſhrubs.

I have often ſeen theſe ſpiders, when dropping, or falling, as it ſeemed, from a tree, ſtop or ſupport themſelves in the midway, by means of their thread; and I found that this was done by the help of one of their hind feet, which they continually apply to the thread as they ſpin it. Theſe feet are each of them furniſhed with three nails, or claws, ſtanding ſeparate, or apart from each other. Two of theſe claws are at the extremity of the foot, and formed with teeth, or notches, like the cuts in a ſaw, growing narrower towards the bottom; and with theſe they are enabled to hold faſt the thread, in like manner as the pulley or wheel, in thirty-hour clocks, is contrived to lay hold of the clock-line, by means of the groove being alſo narrow at bottom: the third claw is deſtitute of teeth or notches, but ſerves for various uſes to the animal; and this is always to be noted, that when the ſpider does not want to aſcend to an height, but only to lay hold of the web it has ſpun, it always uſes this claw for that purpoſe.

The kind of ſpider I am now deſcribing, has the hind part of its body much larger than is ſeen in other ſpiders; it is provided with eight longer and two ſhorter legs, which ſhorter ones are placed in the fore part of its body on each ſide of the head, and all furniſhed with

with an indented or notched claw as before described. Some will have it, that ſpiders have no more than eight legs, but this appears to be a miſtaken opinion.

In theſe ſpiders I plainly perceived eight eyes, two of which are placed near to each other at the top of the head, and, in my judgment, deſigned to ſee thoſe objects which are above the animal. Two others of them are ſituated a little lower down, in order to diſcover all objects in front; and on each ſide of the head are a pair of eyes cloſe to each other, and of theſe, the two which ſtand forward are to take in the view of all objects lying obliquely, or not ſtraight in front; and the two which ſtand backward, are undoubtedly deſigned to behold all objects behind the animal. And if we conſider that the pupils of theſe eyes are immoveable in the head, we may eaſily conclude, that this number is neceſſary, for enabling the ſpider to behold all circumjacent objects, and to go in ſearch of food.

I have often heard it ſaid, that the ſpider has a ſting, with which, it is alſo reported, it can kill the toad: but, no one could tell me in what part of the body this ſting was placed, therefore, I concluded, that, if there was one, it muſt be in the poſterior or hind part as in other animals and inſects; but, on examination, I found this opinion to be groundleſs. The ſpider is, however, provided with two organs or weapons anſwering every purpoſe of a ſting, which are placed in front of its head juſt below the eyes, and, when not in uſe, they lie between the two ſhorter feet. Theſe weapons or inſtruments of offence, which are bent in the nature of claws, are very ſimilar to the ſting of the ſcorpion and the fangs of the millepede of India, and in each of theſe fangs (for ſo I will call them) is a ſmall aperture, through which, in all probability, a liquid poiſon is emitted by the ſpider at the time it inflicts the wound. [Dr. Mead, in his celebrated Eſſay on Poiſons, when treating of the ſpider, expreſſed his doubt of this fact, by reaſon that he could not himſelf diſcover the aperture; and Mr. Henry Baker, in his Treatiſe on the Microſcope, concurred in opinion with the doctor, that Mr. Leenwenhoek muſt have been miſtaken in this particular. But in another treatiſe, afterwards publiſhed by Mr. Baker, he informs his readers, that he had at length plainly perceived the aperture, and had ſhewn the ſame to Dr. Mead, who was much pleaſed with the diſcovery. A teſtimony this, greatly to the honour of our author.]

I at ſeveral times incloſed two or three large ſpiders in the ſame glaſs, and always found that when they approached each other they would fight to that degree, as to be covered with the effuſion of blood from their bodies. I alſo obſerved, that the ſmaller ſpiders always avoided the larger; but, when two of nearly equal ſize approached each other, neither would give way, but both of them grappled together furiouſly with their fangs, till one of them lay dead upon the ſpot, its body being as wet with the blood flowing from the wounds received, as if water had been poured upon it. I at one time had a ſpider which was wounded by the bite of another in the thickeſt part of its leg, and from the wound there iſſued ſome blood, in quantity, about the ſize of a large grain of ſand; this wounded leg, the ſpider held up, as unable to uſe it, and ſoon afterwards the whole leg dropped from its body: whenever the breaſt or fore part of the ſpider was wounded, I always obſerved the wound to be mortal. [If any reader ſhould be diſpoſed to try the experiment

ment of ſetting ſpiders to fighting, he muſt not expect to ſee a red liquor iſſue from the wounded ſpider; for the circulating fluid in many inſects is clear or colourleſs, though as fitly to be denominated blood, as that which flows in the veins of animals.]

I had imagined, that, when a ſpider applied its thread either to ſome foreign ſubſtance or to another thread, that the thread newly ſpun muſt be covered with ſome viſcous or glutinous matter by which it became faſtened, in like manner as we obſerve in ſilk-worms threads. But I now found that the ſpider cannot fix its thread to any thing, without imprinting the hind part of its body on the place, by which preſſure, it emits an incredible number of exceſſively ſmall threads, diverging in every direction, from whence we may conclude, that, as ſoon as the threads are expoſed to the air, they loſe their viſcoſity or gluey quality. When I at firſt began the diſſection of the ſpider, and endeavoured to diſcover the viſcous or gummy ſubſtance from whence theſe threads proceed, and could not ſatisfy myſelf in that particular, I was aſtoniſhed, not being able to conceive how, from ſo moiſt a body as this creature's, there could in ſo ſhort a time be produced threads ſtrong enough to bear the weight, not only of one, but of ſix ſpiders at a time. And, upon endeavouring to diſcover the texture of theſe threads, I could at that time perceive no more, than that the ſame thread appeared in ſome places to be one and entire, and in others to be compoſed of three, four, or more, threads; and, though I often endeavoured to obſerve thoſe threads immediately as they iſſued from the ſpider's body, I could not obtain a perfect view of them, notwithſtanding which, I did not doubt, that what is commonly ſuppoſed to be one thread, is, in fact, compoſed of many. I determined therefore, ſo to fix a ſpider on its back, that it could not move the hind part of its body; and, this being done, I contrived with a ſmall pair of pincers to draw out from the body, that ſmall part of the thread which projected from the organ or inſtrument from which the threads proceed, and then I perceived a great number of exceeding ſmall threads iſſue forth, which, when at about one or two hairs breadth diſtance from the ſpider's body, united in one or two threads, and that in this manner the larger threads were compoſed. Not content with theſe obſervations, I ſet about deviſing means of keeping the threads ſeparate, as they iſſued from the ſpider's body, ſo that I might be able to give ſome repreſentation of their inconceivable fineneſs, and at three ſeveral times I ſucceeded herein to my wiſh. But yet, this fineneſs cannot by any efforts of the pen or pencil, be adequately deſcribed. For upon applying the utmoſt magnifying powers of the microſcope, threads are diſcovered ſo exquiſitely ſlender, as almoſt entirely to eſcape the ſight. I have ſometimes endeavoured to count theſe threads as they iſſued forth, but always without ſucceſs.

If we duly conſider that the threads of ſpiders, which to the naked eye ſeem to be ſingle, are compoſed of many ſmaller ones, and that they thence acquire the ſtrength we obſerve them to have, we ſhall more than ever be aſſured, that no flexible bodies (except thoſe made of metal, the component particles of which are, by the force of fire, moſt cloſely compacted or knit together), can have any great ſtrength or toughneſs, unleſs they are compoſed of oblong parts laid ſide by ſide by ſide, and that their ſtrength or toughneſs will be greater where theſe oblong component parts are twiſted to-

gether, or made to cohere by ſome glutinous matter, as are ſpun ſilk, linen garments, ropes, and the like. And this is the reaſon why all the ſingle threads of flax are very tough in proportion to their ſize, for each of them is compoſed of ſtill ſmaller particles or fibres, which are not only joined together by a certain viſcous or gummy matter, but are alſo ſurrounded with a coat or bark, as it may be called; whereby their inward component fibres are rendered ſtill ſtronger.

Again, if we advert to the great number of exceſſively ſlender threads, proceeding all at the ſame time from the body of the ſpider, we muſt acknowledge that this kind of formation is neceſſary; for, were it a ſingle thread which is ſpun by this creature with ſuch celerity, the liquid matter of which it is formed could not, on its expoſure to the air, become a ſolid ſubſtance ſo quickly as theſe minute threads, an hundred or more of which, taken together, do not in my opinion equal the hundredth part of one of thoſe hairs I can take from the back of my hand.

In a word, the inſcrutable power and wiſdom of the Almighty Creator are manifeſtly diſplayed in the formation of ſuch a thread as the ſpider's, the wonderful make of which is ſeldom obſerved, becauſe, the fineneſs and delicacy of its texture are not diſcernible by the naked eye.

Upon beholding the exquiſite ſlenderneſs, and alſo the multitude, of theſe threads, I was ſtruck with aſtoniſhment, upon conſidering how wonderful muſt be the organs in a ſpider's body to produce ſo many, and at the ſame time all diſtinct from each other. And, although I never expected that I ſhould be able to dive into this ſecret of nature, yet, upon diſſecting the hind part of one of the largeſt ſpiders I could procure, and attentively examining it, I at length, with the greateſt admiration, perceived a great number of exceſſively ſmall organs, from each of which, one exquiſitely fine thread proceeded, and theſe were ſo many, that I thought their number muſt at leaſt exceed four hundred. They were not all placed cloſe together, but in eight diſtinct ſpots or compartments; ſo that, if the ſpider uſes all theſe organs at the ſame time, eight ſeveral threads may be formed, each of which will conſiſt of a great number of ſmaller ones. Again, theſe ſmaller threads differ in ſize, for one of the organs will be ſeen to ſpin a thread twice as large as the next adjoining to it.

If any perſon examines by the microſcope that part towards the extremity of the ſpider's body from whence its thread proceeds, he will obſerve the ſpot to be, as it were, ſurrounded by five ſeveral protuberances or riſings, each ending in a point, and altogether forming a kind of incloſure; but from the anterior or forwardeſt of theſe five protuberances no threads proceed. The other four on their outer ſides are thick ſet with hairs, ſo that all the ſmaller organs deſtined to ſpin the threads are ſituated towards the inſide, the reaſon of which I take to be, that they may be preſerved uninjured when the ſpider is creeping into holes where it does not want to ſpin its web, or while running along the ground, or after its prey. When theſe laſt-mentioned four protuberances are put aſide from each other, there will be ſeen in the middle or ſpace between them four ſmaller ones, each furniſhed with the like organs for ſpinning threads, but ſmaller in ſize and fewer in number. Theſe organs for ſpinning,

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being by this means all expoſed to view, exhibit the appearance, as it were, of a field, thick ſet with an incredible number of pointed parts, each producing one thread; but theſe pointed parts are not made gradually tapering from the baſe to the point; they are formed, as if one were to imagine a ſmall reed ſomewhat tapering, having a ſtill ſmaller one joined to its taper end, and this latter terminating in a point, which point, in theſe organs I am now deſcribing, is as fine as imagination can conceive.

Now if we lay it down as a fact, that a young ſpider, which is ſeveral hundred times ſmaller than a full grown one, is furniſhed with the ſame orgins as the larger, and that as the ſpider, ſo the organs do by degrees grow proportionably larger, the neceſſary concluſion is, that the threads ſpun by a young ſpider, are many hundred times finer than thoſe ſpun by one full grown, which exquiſite ſlenderneſs it ſeems beyond the power of the human mind to form a true idea of.

After this, I took a ſmall frog, whoſe body was about an inch and an half in length, which I put into a glaſs tube together with a large ſpider, in order to ſee the actions of theſe two animals when brought together; and I obſerved the ſpider paſs over the frog without hurting it, though with its fangs diſplayed as if to attack the frog. Upon this, I cauſed the frog to fall againſt the ſpider, who, thereupon, ſtruck his fangs into the frog's back, making two wounds, one of which exhibited a red mark, and the other a purple ſpot. I then brought the frog to the ſpider a ſecond time, who, thereupon, ſtruck his fangs into one of the frog's fore feet, whereby ſome few of the blood veſſels were wounded. Having provoked the ſpider a third time, he ſtruck both fangs into the frog's noſe, preſently after which, I took the ſpider out of the glaſs. The frog, thus wounded, ſat without motion, and, in about the ſpace of half an hour, it ſtretched out its hind legs and expired. The next day I brought another frog, about the ſame ſize as the former, to the ſame ſpider, but, though it was twice wounded, I did not perceive it to be injured; perhaps becauſe the ſpider's bite may not be ſo venomous in our climate as in warmer regions, or elſe that the poiſon of this ſpider might have been exhauſted by former attacks.

Towards the end of October, I took ſeveral of the largeſt ſpiders that could be got, and placed them in glaſſes apart by themſelves, in order to wait for their laying eggs, which I purpoſed to open, and examine the contents. Two of theſe ſpiders, after being confined ten or twelve days, I found had laid their eggs, and enveloped them in ſo thick a web, that I was aſtoniſhed to behold it, conſidering that it had been ſpun in a few hours ſpace. Some of theſe eggs I opened, and found the inſide to be of a yellowiſh colour; the form of each egg was almoſt round, and nearly the thirtieth part of an inch in diameter, and the whole collection of eggs laid by one ſpider compoſed a rounding figure, almoſt ſpherical, nearly half an inch in diameter, from whence may be computed how great a number of eggs the ſpider lays. And one would almoſt think it impoſſible for ſo many to be contained within this creature's body; ſince upon viewing them with the naked eye, as they lie together in regular order, they occupy a larger ſpace than the ſize of the animal itſelf. But it muſt be conſidered, and it is what I have often experienced in opening ſpiders, that the eggs while within their bodies are not of a globular figure, but being very ſoft they lie compreſſed together,

and therefore are of divers ſhapes, but as ſoon as emitted from the ſpider they aſſume a ſpherical form, by reaſon of the equal preſſure of the atmoſphere on every part of them; and when of this round figure, being placed in exact order, ſide by ſide, and only touching each other in a point, they muſt neceſſarily, to our view, occupy more ſpace than they did while in the animal's body.

I at firſt was not able to conceive by what means the ſpider could place its eggs ſo exactly in the centre of the web; but now I was ſatisfied in that particular; for, while I was obſerving a third ſpider which was fixing a web to the glaſs in order to lay her eggs in it, I ſaw that firſt ſhe made a kind of thick layer of threads, and faſtened them to the glaſs before ſhe began to lay one egg; and it was moſt worthy of remark, that this layer or ſtratum was not flat, but curiouſly made with a roundiſh cavity. In about three quarters of an hour's ſpace, upon again obſerving the ſpider, I ſaw that this cavity was not only filled with eggs, but that eggs were piled up above the edges of it to the ſame height as the hollow of the cavity below, and the ſpider was then buſied in ſpinning a web to encloſe the eggs on every ſide. For this purpoſe ſhe employed not only the hind part of her body from whence the threads were ſpun, but her two hinder feet, with which ſhe placed the threads in due order. And now all the organs uſed in producing the threads appeared in view, each of them in the act of emitting its particular thread. I alſo obſerved the ſpider elevate the hind part of its body about the breadth of a ſtraw, and then fix the thread which by the elevation had been drawn out to that length, to the web which was already ſpun about the eggs.

I was very deſirous to ſee a ſpider in the act of laying its eggs, which at length I obtained a ſight of, and obſerved that they were not emitted from the ſame part as is uſual in all other minute animals; but from the fore part of its belly, not far from the hind legs; and near the place I obſerved a kind of little hooked organ, handſomely ſhaped, which I had often before ſeen in this animal, and could not imagine for what purpoſe it was deſigned; but now I perceived, that it extended over that part whence the eggs iſſued, and I therefore conjectured that its uſe was to depoſit them in regular order within the web prepared to receive them.

On the firſt of January, I put ſome ſpider's eggs into a glaſs tube which I conſtantly carried about me, in order to diſcover whether by the warmth I imparted to them they would be hatched ſooner than the uſual time, which is in the ſpring; and on the 17th of January I ſaw above twenty-five young ſpiders completely hatched, and as many more half-way out of the eggs; and in the evening of the ſame day I counted above an hundred and fifty young ones. The next day, the number was not increaſed, for the remainder of the eggs, to the number of fifty, or thereabouts, were either barren, or the young ſpiders were dead within them. Upon expoſing the glaſs tube at this cold ſeaſon, to the air for about a quarter of an hour, the young ſpiders lay without motion, but, upon applying ſome warmth to it, they began to move, and the greater number of them crowded themſelves together in an heap, after the manner of bees, within the web where the eggs had been. On the 21ſt of January I could diſcern eight eyes in each of them, which till then had not been viſible, and on the 25th of January they began to ſpin webs in the ſame manner as full-grown ſpiders. I had hitherto been at a loſs to conceive

conceive how this great number of young ſpiders could be ſupplied with nouriſhment, conſidering that the natural food of this creature is the ſubſtance of other inſects; but I now perceived that they had fed on the barren eggs which had been left in the glaſs, and they afterwards devoured one another till they were reduced to a very few in number.

I have often compared the ſize of the thread ſpun by full-grown ſpiders with a hair of my beard. For this purpoſe I placed the thickeſt part of the hair before the microſcope, and, from the moſt accurate judgment I could form, more than an hundred of ſuch threads placed ſide by ſide could not equal the diameter of one ſuch hair. If then we ſuppoſe ſuch an hair to be of a round form, it follows that ten thouſand of the threads ſpun by the full-grown ſpiders when taken together, will not be equal in ſubſtance to the ſize of a ſingle hair. To this if we add that four hundred young ſpiders, at the time when they begin to ſpin their webs, are not larger than a full-grown one, and that each of theſe minute ſpiders poſſeſſes the ſame organs as the larger ones, it follows, that the exceeding ſmall threads ſpun by theſe little creatures, muſt be ſtill four hundred times ſlenderer, and conſequently that four millions of theſe minute ſpiders threads cannot equal in ſubſtance the ſize of a ſingle hair. And, if we farther conſider of how many filaments or parts each of theſe threads conſiſts, to compoſe the ſize we have been computing, we are compelled to cry out, O what incredible minuteneſs is here; and how little do we know of the works of nature!

I never could procure a ſight of theſe animals when coupling together, either in the gardens or fields, nor when incloſed in glaſſes, for I always perceived the female to run away at the approach of the male; and, having at one time incloſed three male ſpiders with a female in one glaſs, the female flew at the males with ſo much fury, and wounded them to ſuch a degree, that blood iſſued from their legs and feet. Hereupon I killed the female, and the next day I ſaw two of the males lie dead, and the ſurvivor employed in devouring the dead female.

Theſe are the chief of my obſervations on the ſpider, an animal held in ſuch deteſtation by many, that they dread even the ſight or approach of it, but in which we find as much perfection and beauty as in any other animal.

TO PREPARE AURUM FULMINANS.

IF gold be diſſolved in aqua-regia, and precipitated with volatile lixivious ſalt, or with fixed lixivious ſalt, when the aqua-regia has been prepared with ſal ammoniac, a yellow powder will be obtained, which, when heated, or only bruiſed, explodes ſuddenly with a prodigious report. The force of this aurum fulminans is terrible, and, in the hands of incautious perſons, has often occaſioned much miſchief. But, however powerful, it cannot, as ſome have imagined, be employed inſtead of gun-powder, even were not this impoſſible on account of the high value of the metal from which it is made; for exploſion does not take place when the powder is confined. Phænomena of this kind are always of importance, and afford ſubject of ſpeculation to the philoſopher, though no immediate uſe can be made of them. Experiments, however, have rendered it

it probable that this powder may poſſeſs ſome medicinal virtues, and we are aſſured that it can be employed in enamel painting.

The period when this powder was invented is uncertain as the accounts given of its compoſition. It is, however, probable that the diſcoverer was a German benedictine monk, who lived about the year 1413; and there is reaſon to think that he may have made many uſeful obſervations, of which we are yet as ignorant as of the meaning of the Egyptian hieroglyphics; for both are almoſt equally unintelligible, though ſome, who poſſeſs more imagination and credulity than judgment, think they underſtand and can explain them. The Egyptian hieroglyphics are indeed totally incomprehenſible, but thoſe of Valentin only in part; for, when new obſervations have been made reſpecting gold, they have been found afterwards in the works of Valentin, in a paſſage which no one before could underſtand. In this caſe theſe writings are of no more utility than the anſwers of the ancient oracles, which were comprehended when a knowledge of them was no longer neceſſary, and which miſled thoſe who ſuppoſed that they comprehended them earlier. But the account of aurum fulminans in Valentin is ſo uncommonly intelligible, that it almoſt ſeems he either wrote in an explicit manner without perceiving it, or that the words eſcaped from him contrary to his intention. As the work in which it may be found, is ſcarce, we ſhall tranſcribe the preſcription.

"Take a pound of aqua-regia made with ſal ammoniac; that is, take a pound of good ſtrong aquafortis, and diſſolve in it four ounces of ſal ammoniac, and you will thus obtain a ſtrong aqua-regia, which muſt be repeatedly diſtilled and rectified, until no more feces remain at the bottom, and until it become quite clear and tranſparent. Take fine thin gold-leaf, in the preparation of which antimony has been uſed; put it into an alembic; pour aqua-regia over it; and let as much of the gold as poſſible be diſſolved. After the gold is all diſſolved, add to it ſome *oleum tartari*, or *ſal tartari* diſſolved in a little ſpring-water, and it will begin to effervеſce. When the effervеſcence has ceaſed, pour ſome more oil into it; and do this ſo often till the diſſolved gold fall to the bottom, and until no more precipitate is formed, and the aqua-regia remains pure and clear. You muſt then pour the aqua-regia from the gold calx, and waſh it well with water eight or ten times. When the gold calx is ſettled, pour off the water, and dry the calx in the open air when the ſun ſhines, but not over the fire; for, as ſoon as this powder becomes a little heated or warm, it explodes, and does much miſchief as it is ſo powerful and violent that no man can withſtand it. When the powder has been thus prepared, take ſtrong diſtilled vinegar and pour over it; keep it continually over the fire for twenty-four hours, without ſtirring it, ſo that nothing may fall to the bottom, and it will be again deprived of its power of exploding; but take great care that no accident happen by careleſſneſs. Pour off the vinegar, and, having waſhed the powder, expoſe it to dry."

The latter part of the receipt ſhews that Valentin had made experiments in order to diſcover how aurum fulminans might be deprived of its power of exploding, and he found that this could be done by vinegar. It appears from his writings, that he had diſcovered alſo that the ſame thing could be effected by ſulphur.

After

After the time of Valentin, Crollius, who lived in the laſt half of the ſixteenth century, ſeems to have been beſt acquainted with this powder, and to have principally made it known: at any rate his works are referred to by moſt of the modern writers. He calls it *aurum volatile*, and ſpeaks of its being uſeful in medicine. The name *aurum fulminans* was firſt uſed by Beguin. The method of preparing it is deſcribed by Kircher, who conſiders it as a thing uncommon, and who calls it *pulvis pyrius aureus*.

ON THE USE OF WIGS.

THE Greeks and Romans uſed falſe hair, and had likewiſe a kind of hair-powder. Hannibal wore falſe hair.—Lampridius gives a deſcription of the Emperor Commodus's wig, which was powdered with gold-duſt, and anointed with ointments of an agreeable odour, that the duſt might adhere to it. It appears not improbable, that, even then, not merely a vain affectation of pomp, but the effects of too active a gallantry (though trifling when compared with thoſe of more modern times) may have given occaſion to this invention. For farther information on this ſubject, we refer the reader to the learned commentators on the ſatirical exclamation of Cæſar's ſoldiers, during his triumphal entry into Rome: "*Urbani, ſervate uxores, mœchum calvum adducimus!*" Henry III. king of France, loſt his hair through the then yet new-faſhioned venereal diſeaſe (although, indeed, his grandfather had already been infected with it); he had therefore one of the caps, then uſually worn, covered with falſe hair; but yet he ventured not to take off his hat in the preſence of his queen, or of the foreign ambaſſadors, for fear they ſhould obſerve his loſs. In 1518, John duke of Tuſcany ordered his head-bailiff at Cobourg to procure for him from Nuremberg a handſome falſe head of hair; "but ſecretly (wrote he), that it may not be known that it is for us; and let it be curled, and ſo contrived that it may be put on the head without being obſerved." But in the reign of Louis XIV. when polite manners and gallantry had become more general, men more ſenſibly affected with cold, &c. and the number of bald heads greater; they were no longer aſhamed of the caps covered with falſe hair; many people even, who had not loſt their hair, wore them from an affectation of faſhionable gallantry, from the effects of which they were really exempt. This gave riſe to the idea of weaving hair into a linen cloth, and likewiſe into fringes, which were uſed for ſome time under the name Milan Points. Theſe fringes or laces were ſown in rows to the plain caps, which were now made of a thinner ſheep-ſkin; and this head-dreſs was called by the French *perugue*, by the Germans *parucke*, by the Engliſh *periwig*, contracted into *wig*.—At laſt they invented a kind of three-thread treſſes, which were ſewed to ribbon, or other ſtuffs; theſe they then ſtretched out, and joined together on blocks cut into the ſhape of the head. This is the origin of our preſent wigs, the making, repairing, and dreſſing, of which furniſh employment to ſo vaſt a number of people. The firſt who wore a *perugue* was an abbé named La Riviere. At one time this ornament of the head was ſo thick, ſo loaded with hair, and ſo long, that it hung down as low as the waiſt. A perſon who happened to have a lean viſage was quite hid in this cloud of hair. The fore-

part of the wig was likewiſe worn very high: in France this was called *devant à la Fontagne*, from the marquis of that name, who had brought it into vogue in the time of Louis XIV.—A certain Ervais at laſt found out the art of frizzing the wigs; by which means, with a ſmall quantity of hair, they appear fuller than they could be with even a much greater. The bag-wigs firſt came into faſhion during the regency of the Duke of Orleans, and thence obtained the name of *perruques à la Regence*. The Emperor Charles VI. would allow no one to be admitted into his preſence without a wig with two tails. Of a more modern date than wigs is our preſent hair-powder. In the reign of Louis XIV. it was not yet in general uſe; and that king at firſt diſliked the faſhion of wearing it. The players are ſaid to have firſt powdered their hair; but, for a long time after the introduction of that practice, always combed the powder out again, as ſoon as they returned from the theatre.

VAPOUR MACHINE FOR RAISING WEIGHTS.

AT Chaillot, near Paris, at the forges of Meſſrs. Perrier, an experiment was made on the 13th of Nov. 1799, of a machine of their invention, for raiſing coals from coal-mines.

The vapour machine, or fire-pump, has been long ſince employed in the working of thoſe mines, to drain the water. Thoſe learned mechanics therefore imagined that the ſame advantage and the ſame economy might be found in drawing up the coals, by ſubſtituting the new vapour-machine, called a rotation-engine, inſtead of horſes, which are commonly uſed for that purpoſe, but, to accompliſh that end, it was neceſſary to compoſe that machine in ſuch a manner that it might have the faculty of obeying its conductor, of changing its movements at pleaſure, in order to raiſe the ton with coals, which is loaded at the bottom of the pit, and to let it down again when empty, and of ſtopping it at the height required, when it is neceſſary to ſend down workmen to mend the wood-work of the pit; it was farther neceſſary, in order to render the reſiſtance which that machine had to overcome, uniform, to annihilate the weight of the cord, which becomes very heavy when the pits are of a great depth. They have accompliſhed all thoſe points by a very ſimple mechaniſm, which any man may be made acquainted with in a few minutes.

The experiment which has been made has proved that a ton of coals, conſumed in the furnace of that machine, would draw up, in the ſame ſpace of time, about 100 tuns of the ſame weight, from a pit of 150 metres in depth, and in proportion from pits of a greater or ſmaller depth.

The Paris Commercial Journal, in giving an account of this invention, obſervers, that it will occaſion a conſiderable ſaving in the working the coal mines, and produce a diminution in the price of that article of fuel, ſo neceſſary to the arts; and, farther that, if it be adopted, the perſons who work the coal mines will draw from the bowels of the earth, without conſuming the produce of its ſurface, all the means which are neceſſary; they will reſtore a great number of horſes to commerce and agriculture. The working of the mines of Anzin, near Valenciennes, employs four hundred and fifty horſes, which would be ſaved.

FOTHERGILL ON THE HYDROPHOBIA.

DR. Fothergill's Paper, "On the nature of the diſeaſe occaſioned by the bite of a mad-dog, the means of an effectual remedy," is one of thoſe tracts, the general diſperſion of which might be highly uſeful. The deſcription of the diſorder is tremendous; the remedy recommended is principally olive-oil, operating by producing copious perſpiration. The doctor alſo ſuggeſts the poſſible effects of muſic in the cure or alleviation of this dreadful malady. The following extract from this paper cannot but be uſeful and intereſting:

It appears that the hydrophobia may be conſidered as a ſpecies of ſpaſmodic *angina*, produced by ſpecific contagion, which exerts its influence, 1ſt. On the injured part, and afterwards on the organs of deglutition. 2dly. That the local ſtimulus, being propagated to the brain, excites the moving powers of the ſyſtem into re-action; and hence the convulſive motions which ſpeedily exhauſt the ſtrength, and finally extinguiſh the vital principle. 3dly. That profuſe bleeding may prove highly injurious. 4thly. That the forcing down large quantities of liquid is a cruel practice, as it cannot but increaſe the ſpaſms, and exaſperate the malady.

The chief indications of cure appear evidently to be the following:—1ſt. To diſſolve the fatal connection between the injured part and the organ of deglutition. 2dly. To calm the violent ſpaſms, and ſoothe the nervous ſyſtem. 3dly. To ſupport the ſtrength, and invigorate the whole frame.

To anſwer the firſt of theſe indications, much depends on external means, and cloſe attention to the injured part. The moment any darting pains, attended with numbneſs and diſcoloration, are perceived, they denote the poiſon to be in an active ſtate, and that no time ought to be loſt in proſecuting the moſt vigorous meaſures.

The period from the commencement of theſe ſymptoms to the approach of the hydrophobia is uncertain, and perhaps rarely exceeds five or ſix days. To prevent, therefore, the initation being propagated to the throat, let the ſuſpected part be immediately cut out, and the ſurface of the wound duly cauterized. If any difficulty of deglutition has already been felt, let a ſharp bliſter or ſinapiſm be applied to the throat, extending from ear to ear. For unleſs the morbid impreſſion can be obliterated by one yet ſtronger, and the natural action of the ſympathizing parts ſpeedily reſtored, there can be but ſmall hopes of ſucceſs.

A malady ſo rapid in its progreſs, ſo intractable by nature, demands herculean remedies, and warrants a prudent trial of the moſt active ſubſtances, with which we are yet acquainted. The Atropa Belladona, in doſes of four or five grains, has been highly extolled by ſome German profeſſors; the lauraceraſus half grain, and arſenic one-eighth, by others. The hyoſcyamus niger, in form of extract, given in doſes of fifteen or twenty grains, in caſes of fixed melancholy, attended with horrors and obſtinate watchings, I have ſometimes found very beneficial. It moreover procures ſleep and compoſure of mind; often where opium fails, or even adds to the inquietude. Now theſe potent remedies, with due caution, may be tried in ſucceſſion; if they fail, they only ſhare the common fate of former antidotes; but, if one of them ſhould anſwer, it may afford an important addition to our ſtock of knowledge.

2dly. To aſſuage the ſpaſms, and ſoothe the nervous ſyſtem.—To effect this, after the hydrophobia has actually appeared, all impediments, and whatever may hurt the acute feelings of the patient, or by the power of aſſociation tend to aggravate his ſufferings, muſt be firſt carefully removed; no dog muſt on any account be allowed to enter the room. Not water only, and other liquids, but all glaring colours and glaſs mirrors, muſt be kept entirely out of his ſight. No loud noiſe, nor cold air, muſt be ſuffered to moleſt him. Having thus removed impediments, we muſt next endeavour to aſſiſt nature, in alleviating the ſpaſms, and in procuring a lucid interval. If there be any critical evacuation in this diſeaſe favourable to our views, it muſt, I conceive, be that of ſweat.

In the cures recorded by Dr. Nugent and others, in five or ſix caſes of the hydrophobia in an advanced ſtate, the treatment was different in each, yet there was one circumſtance common to all, and that was a copious ſweat. Till that appeared, the recovery ſeems to have been doubtful. Nor is the caſe deſcribed by Van Helmont an exception: the patient being plunged in the cold-bath till half dead, the cure was attributed to the fright, but ought rather to have been aſcribed to re-action of the ſyſtem, which, being aided by a warm bed and ſudorific regimen, terminated in a ſalutary ſweat. In a ſubſequent experiment of this kind, equally terrific, no ſweat enſued, and the diſeaſe ſoon proved fatal.

Sudorifics, indeed, ſeldom produce a copious ſweat, unleſs their operation can be aſſiſted by warm diluting liquors. Hence, perhaps, it is, that muſk, valerian, opium, and other powerful ſudorifics, have ſo often failed.—Given merely as antiſpaſmodics, without proper dilution, they ſerve but to flatter hope at the expence of diſappointment; let, therefore, the following method have a fair trial:

In a pint of olive-oil diſſolve an ounce of camphire; let the entire ſurface of the body be diligently rubbed with this ſolution, made warm, continuing the friction before a gentle fire till the whole be expended. After which, let the patient be covered with a flannel and put into a warm bed, till a copious perſpiration be procured. This may be encouraged by an enema of warm wine whey, with an addition of volatile alkaline ſpirit, or *eau de luce*, which laſt has long been deemed a noted ſpecific in France.—The part affected, and alſo the neck and ſpine, ought to be well embrocated twice a-day with tepid-oil, which, by ſoothing the nerves, may act as a powerful anodyne and antiſpaſmodic: could an entire bath of oil be had, it would be, perhaps, greatly preferable to a common bath of warm water.

A patient, in conſequence of the poiſon of arſenic, had long ſuffered ſevere pains and convulſive ſpaſms over the whole ſurface of his body, which reſiſted various internal and external remedies, till he was ordered by M. Bouteille, to be placed, for the ſpace of an hour, at proper intervals, in a bath of warm oil, by which he was ſoon completely cured.

If muſic has charms to harmonize the nerves, and ſoothe the feelings of a melancholy or outrageous maniac, as mentioned on the higheſt authority, can any cauſe be aſſigned why, in a muſical age like the preſent, its powerful influence ſhould not be tried againſt this dreadful malady? Though its effects on the diſeaſe occaſioned by the tarantula, may have been greatly exaggerated, yet, if what

has been confidently aſſerted of its efficacy againſt the envenomed bite of the moſt dangerous ſerpents, be true, the analogy would afford, at leaſt, a preſumptive argument in its favour. But independent of this, other beneficial effects, in removing the wild ravings in certain fevers, might here be produced.

And it was conſidered by Clineas, Aſclepiades, and Aretæus, as an eſſential remedy in phrenzy, melancholy, and mental derangement.

In the Memoirs of the Medical Society of Paris, vol. vi. is an affecting inſtance of a youth of twelve years old, who died of the hydrophobia. The diſtreſſing ſcene, near the cloſe of the diſeaſe, induced the phyſician to try the effect of muſic, by playing before him on a guitar. The harmony, even at this late period, we are told, appeaſed the ſpaſms, and rendered the pulſe more calm and regular.

3dly. To ſupport ſtrength and reſtore the energy of the brain.

To enable the patient to bear up under the unequal conflict, his diet ſhould conſiſt of the moſt nutritious aliments, chiefly of the ſolid kind, to which may be added freſh eggs, jellies, and bread ſoaked in generous wine. If, from his dread of liquids, neither food nor medicine of the fluid kind can be got down, they muſt be conveyed in the form of medicated baths and enemas; of which the body, being in a parched abſorbent ſtate, will imbibe more than is generally imagined. Might not liquids alſo be ſafely conveyed into the ſtomach with a flexible tube, as in caſes of ſuſpended animation?

To reſtore oxigen to the blood, and invigorate the whole ſyſtem, vital air, properly modified, may be inhaled into the lungs. Where this cannot be had, as nitrous acid contains it in a looſe ſtate and readily detached, the acid may be diluted with a portion of water, and adminiſtered as above mentioned.

Should any conſiderable truce to the violent ſymptoms be happily obtained, the return of paroxyſm might poſſibly be obviated by a liberal uſe of Peruvian bark with ſteel, and by repeated oxigenation.

ARTIFICIAL ICE; FOR COOLING LIQUORS.

THE art of preſerving ſnow, for cooling of liquors during the ſummer, in warm countries, was known in the earlieſt ages. This practice is mentioned by Solomon, and proofs of it are ſo numerous in the works of the Greeks and the Romans, that it is unneceſſary to quote them. How the repoſitories for keeping it were conſtructed, we are not expreſsly told; but that the ſnow was preſerved in pits or trenches, is aſſerted by many. When Alexander the Great beſieged the city of Petra, he cauſed thirty trenches to be dug, and filled with ſnow, which was covered with oak branches, and which kept in that manner for a long time. Plutarch ſays, that a covering of chaff and coarſe cloth is ſufficient; and at preſent a like method is purſued in Portugal. Where the ſnow has been collected in a deep gulph, ſome glaſs or green ſods, covered with dung from the ſheep-pens, is thrown over it; and under theſe it is ſo well preſerved, that the whole ſummer through it is ſent the diſtance of ſixty Spaniſh miles to Liſbon.

When the ancients therefore wiſhed to have cooling liquors, they either drank the melted ſnow, or put ſome of it in their wine, or they placed jars filled with wine in the ſnow, and ſuffered it to cool there as long as they thought proper. It appears that in theſe

trenches it could not remain long clean; on the contrary, it was generally ſo full of chaff, that the ſnow-water was ſomewhat coloured with it, and had a taſte of it, and for this reaſon it was neceſſary to ſtrain it.

That ice alſo was preſerved for the like purpoſe, is probable from the teſtimony of various authors, but it appears not to have been uſed ſo much in warm countries as in the northern. Even at preſent, ſnow is employed in Italy, Spain, and Portugal; but in Perſia, ice. We have never any where found an account of Grecian or Roman ice-houſes. By the writers on agriculture they are not mentioned.

Mankind however ſoon conceived the idea of cooling water without ſnow or ice, from having remarked that it became cold more ſpeedily when it had been previouſly boiled, or at leaſt warmed, and then put in a veſſel among ſnow, or in a place much expoſed to the air. Pliny ſeems to give this as an invention of Nero; and a jocular expreſſion in Suetonius makes it at any rate probable, that he was fond of water cooled by this method; but it appears to be much older. It ſeems to have been known even to Hippocrates: at leaſt Galen believes ſo. And Ariſtotle was undoubtedly acquainted with it; for he ſays, that ſome were accuſtomed, when they wiſhed water to become ſoon cold, to place it firſt in the ſun and ſuffer it to grow warm. He relates alſo, that the fiſhermen near the Black Sea poured boiling water over the reeds which they uſed in fiſhing on the ice to cauſe them to freeze ſooner. Galen on this ſubject is ſtill more preciſe. He informs us that the above practice was not ſo much uſed in Italy and Greece, where ſnow could be procured, as in Egypt and other warm countries, where neither ſnow nor cool ſprings were to be found. The water after it had been boiled was put into earthen veſſels or jars, and expoſed in the evening on the upper part of the houſe to the night air. In the morning theſe veſſels were put into the earth, (perhaps in a pit,) moiſtened on the outſide with water, and then bound round with freſh or green plants, by which means the water could be preſerved cool throughout the whole day. Athenæus, who gives a like account from a book of Protagorides, remarks, that the pitchers filled with water, which had become warm by ſtanding all day long in the ſun, were kept continually wet during the night, by ſervants deſtined to that office, and in the morning were bound round with ſtraw. In the iſland Cimolus, water which had become warm in the day-time was put into earthen jars, and depoſited in a cool-cellar, where it grew as cold as ſnow. It was generally believed therefore, that water which had been warmed or boiled, was ſooneſt cooled, as well as acquired a greater degree of refrigeration; and on this account boiled water is mentioned ſo often in the works of the ancients.

The ſame opinion prevails at preſent in ſouthern countries of Aſia, and people there ſtill let their water boil before they expoſe it to the air to cool. The experiments however which have been made on this ſubject by philoſophers, have proved very different in the reſult. When one indeed places boiling and cold water, all other circumſtances being equal, in froſty air, the latter will become ice before the former has cooled; but when one expoſes to the cold, water that has been boiled, and unboiled water of equal degrees of heat, it may then be expected that the former will be converted into ice ſomewhat ſooner.

Water

Water by being boiled loſes a conſiderable portion of its air, while that of unboiled water muſt be diſengaged before it can freeze, and by this its particles are kept in continual motion, which may retard its congelation. Boiled water however in cooling imbibes air again, but for that purpoſe ſeven or eight days are neceſſary, according to the obſervations of Mariotte. One might therefore conjecture that the Indians are right.

The experiments, however, made by Mariotte, Perrault, the Academy del Cimento, Marian, and others, ſhewed no perceptible difference in the time of freezing, between boiled and unboiled water; but the former produced ice harder and clearer: the latter ice more full of bliſters. In later times, Dr. Black of Edinburgh has, from his experiments, aſſerted the contrary. Boiled water, he ſays, becomes ice ſooner than unboiled, if the latter be left at perfect reſt; but, if the latter be ſtirred ſometimes with a chocolate-ſtick, it is converted into ice as ſoon as the former. This difference he explains in the following manner:—Some motion promotes congelation; this ariſes in the boiled water, through its re-imbibing air; and, therefore, it muſt neceſſarily freeze before the unboiled; provided the latter be kept at perfect reſt. Fahrenheit had before remarked that water not moved would ſhew a cold ſome degrees below the freezing point, without becoming ice.

The time of congelation ſeems regulated by circumſtances, with which philoſophers are not yet ſufficiently acquainted. A certain, but not every degree of ſtirring haſtens it; ſo that every icy particle which is formed on the ſide of the veſſel, or which falls from the atmoſphere, may convert the water ſufficiently cooled into ice inſtantaneouſly; and ſuch unavoidable accidents muſt, where all other circumſtances are equal, cauſe a great difference in the period of freezing. A variation, therefore, in the time, may be well expected; both becauſe the boiling of the river-water expels the aerial acid; and becauſe it produces alſo a kind of inſpiſſation, and becauſe by both theſe effects being produced the water muſt undergo ſome change.

The cooling of water, in ancient times, ſeems not to be aſcribed ſo much to the boiling, as to the jars being kept continually wet, and to the air to which it was expoſed. A falſe opinion ſeems alſo to have prevailed reſpecting the cauſe; and, becauſe it was conſidered to be the boiling, many have not mentioned the real cauſe, which appeared to them only to afford a trifling aſſiſtance, though it has been remarked both by Galen and Athenæus. We know at preſent that the heat decreaſes by evaporation, or that coolneſs is produced. A thermometer kept wet in the open air, falls as long as evaporation continues. With æther of vitriol, and ſtill better with that of nitre, which evaporates very rapidly, one can in this manner bring water even in the middle of ſummer to freeze; and Cavallo ſaw in ſummer a Fahrenheit's thermometer, which ſtood at 64°, fall in two minutes, by means of æther, to + 3, that is to 29° below the freezing point.

On this principle depends the art of making artificial ice at Calcutta and other parts of India, between 25° 30′ and 23° 30′ of north latitude, where natural ice is never ſeen. Trenches two feet deep, dug in an open plain, are ſtrewed over with dry ſtraw; and in theſe are placed ſmall ſhallow unglazed earthen pans, filled with water at ſunſet. The ice which is produced in them is carried away before ſunriſe next morning, and conveyed to an ice-cellar fifteen feet deep; where

where it is carefully covered with ſtraw to be preſerved from the external heat and air. A great deal, in this proceſs, depends upon the ſtate of the atmoſphere. When calm, pure, and ſerene, it is moſt favourable to the congelation; but when the winds are variable, or the weather heavy and cloudy, no ice is formed; and the ſame is often the caſe when the nights are raw and cold.

It was once believed that this freezing was occaſioned principally by the water having been boiled; but it ſeems to be owing much rather to evaporation. It is not, however, ſaid that the veſſels are kept continually wet on the outſide, but that they are unglazed, and ſo porous or little burnt, that the water oozes through them; and on that account their exterior ſurface appears always moiſt. By veſſels of this kind the trouble of wetting is ſaved. What has been ſaid reſpecting the influence of the weather ſerves, in ſome meaſure, to confirm this conjecture. The more it favours evaporation, the ice is not only formed more eaſily, but it is better; and, when evaporation is prevented by the wind or the weather, no ice is produced. The lateſt accounts how ice is made at Benares, ſay expreſsly that boiled water is not employed; and that all thoſe veſſels, the pores of which are ſtopped by having been uſed, do not yield ice ſo ſoon or ſo good. In porcelain veſſels none is produced; and this is the caſe alſo when the ſtraw is wet.

It appears that the practice of cooling liquors, at the tables of the great, was not uſual in any country beſides Italy and the neighbouring ſtates, before the end of the ſixteenth century. In the middle of that century there were no ice-cellars in France; for when Belon relates, in the Account of his Travels, in 1553, how ſnow and ice were preſerved at Conſtantinople throughout the whole ſummer, for the purpoſe of cooling ſherbet, he aſſures us that the like method might be adopted by his countrymen; becauſe he had found ice-cellars in countries warmer than France. The word *glacière* alſo is not to be met with in the oldeſt dictionaries; and it does not occur even in that of Monet, printed in 1635. Champier, the phyſician who attended Francis I. when he had a conference with the Emperor Charles V. and Pope Paul III. at Nice, ſaw the Spaniards and Italians put ſnow, which they cauſed to be brought from the neighbouring mountains, into their wine in order to cool it. That practice, which excited his aſtoniſhment, he declared to be unhealthful; and this proves that, in his time, it had not been introduced at the French court.

Grand d'Auſſy quotes an anecdote, related by Brantome, from which he forms the ſame concluſion. The dauphin, ſon of Francis I. being accuſtomed to drink a great deal of water at table, even when he was overheated, Donna Agnes Beatrix Pacheco, one of the ladies of the court, by way of precaution, ſent to Portugal for earthen veſſels, which would render the water cooler and more healthful; and from which all the water uſed at the court of Portugal was drunk. As theſe veſſels are ſtill uſed in Spain and Portugal, where the wine is cooled alſo with ſnow, both methods might have been followed in France. Theſe Portugueſe veſſels are made of red bole; are not glazed, though they are ſmooth, and have a faint gloſs on the ſurface like the Etruſcan vaſes. They are ſo little burnt, that one can eaſily break them with the teeth: and the bits readily diſſolve in the mouth. If water be poured into ſuch veſſels, it penetrates their ſubſtance; ſo that, when in the leaſt ſtirred, many air-bubbles are produced;

produced; and it at length oozes entirely through them. The water that has ſtood in them acquires a taſte which many conſider as agreeable; and it is probable that it proceeds from the bark of the fir-tree, with which, as we read, they are burnt. When the veſſels are new, they perform their ſervice better; and they muſt then alſo have a more pleaſant ſmell. If they really render water cold, or retain it cool, that effect is to be aſcribed to the evaporation. Their ſimilarity to thoſe in which the Indians make ice is very apparent.

Towards the end of the ſixteenth century, under the reign of Henry III. the uſe of ſnow muſt have been well known at the French court, though it appears that it was conſidered by the people as a mark of exceſſive and effeminate luxury. In the witty and ſevere ſatire on the voluptuous life of that ſovereign and his favourites, known under the title of l'Iſle des Hermaphrodites, a work highly worthy of notice, but which is exceedingly ſcarce, we find an order of the Hermaphrodites, that large quantities of ice and ſnow ſhould, every where, be preſerved, in order that people might cool their liquors with them, even though they might occaſion extraordinary maladies, which, it ſeems, were then apprehended. In the deſcription of an entertainment, we are told that ſnow and ice were placed upon the table before the king; and that he threw ſome of them into his wine; for the art of cooling it without weakening it was not then known. The ſame method was practiſed even during the whole firſt quarter of the ſeventeenth century.

Towards the end of the above century this luxury muſt have been very common in France. At that period there were a great many who dealt in ſnow and ice; and this was a free trade which every perſon might carry on. Government, however, which could never extort from the people money enough to ſupply the wants of an extravagant court, farmed out, towards the end of the century, a monopoly of theſe cooling wares. The farmers, therefore, raiſed the price from time to time; but the conſumption and revenue decreaſed ſo much, that it was not thought worth while to continue the reſtriction; and the trade was again rendered free. The price immediately fell; and was never raiſed afterwards but by mild winters or hot ſummers.

The method of cooling liquors by placing them in water in which ſaltpetre has been diſſolved, could not be known to the ancients, becauſe they were unacquainted with that ſalt. They might, however, have produced the ſame coolneſs by other ſalts which they knew, and which would have had a better effect; but this they never attempted. The above property of ſaltpetre was firſt diſcovered in the firſt half of the ſixteenth century; and it was not remarked till a long period afterwards, that it belongs to other ſalts alſo.

The Italians were the firſt people by whom it was employed; and about the year 1550, all the water, as well as the wine, drunk at the tables of the great and rich families at Rome, was cooled in this manner. Blaſius Villafranca, a Spaniard, who practiſed phyſic in that capital, and attended many of the nobility, publiſhed, in the before-mentioned year, an account of it, in which he aſſerts, more than once, that he was the firſt perſon who had made the diſcovery publicly known. In his opinion it was occaſioned by the remark that ſalt-water in ſummer was always cooler than freſh-water. According to his directions, which are illuſtrated by a figure, the liquor

muſt

muſt be put into a bottle or globular veſſel with a long neck, that it may be held with more convenience; and this veſſel muſt be immerſed in another wide one filled with cold water. Saltpetre muſt then be thrown gradually into the water; and while it is diſſolving the bottle muſt be driven round with a quick motion on its axis, in one direction. Villafranca thinks that the quantity of ſaltpetre ſhould be equal to a fourth or fifth part of the water; and he aſſures us that, when again cryſtalliſed, it may be employed ſeveral times for the ſame uſe, though this, before that period, had by many been denied. Whether other ſalts would not produce the like effect the author did not think of trying; but he attempts to explain this of ſaltpetre from the principles of Ariſtotle; and he tells his noble patrons what rules they ſhould obſerve for the preſervation of their health, in regard to cooling liquors.

Towards the end of the ſixteenth century this method of cooling liquors was well known, though no mention is made of it by Scappi, in his Book on Cookery. Marcus Antonius Zimara, however, ſpeaks of it in his Problems. Levinus Lemnius alſo mentions the art of cooling wine by this method ſo much, that the teeth can ſcarcely endure it. We are informed by Bayle, that the earlieſt edition of his work, which has been often reprinted, was publiſhed at Antwerp, in the year 1559, in octavo. It contains only the two firſt books; but, as the above account occurs in the ſecond book, it muſt be found in this edition.

Nicolaus Monardes, a Spaniſh phyſician, who died about the year 1578, mentions this uſe of ſaltpetre likewiſe. It was invented, as he ſays, by the galley-ſlaves; but he condemns it as prejudicial to health. From ſome expreſſions which he uſes it appears that he was not ſufficiently acquainted with it; and that he imagined that the ſalt itſelf was put into the liquor. At a later period we find ſome account of it in various books of receipts; ſuch as that written by Mizaldus in 1566, and which was printed for the firſt time the year following.

In the Mineralogy of Aldrovandus, firſt printed in 1648, this proceſs is deſcribed after Villafranca; but where the editor, Bartholomæus Ambroſianus, ſpeaks of common ſalt, he relates that it was uſual in countries where freſh-water was ſcarce to make deep pits in the earth; to throw rock-ſalt into them; and to place in them veſſels filled with water, in order that it might be cooled. This remark proves that the latter ſalt was then employed for the ſame purpoſe; but it has led the editor into a very groſs error. He thinks he can conclude from it, that the intention of potters, when they mix common ſalt with their clay, is not only to render the veſſel more compact, but alſo to make it more cooling for liquors. But the former only is true. The addition of ſalt produces in clay, otherwiſe difficult to be melted, the ſlighteſt commencement of vitrification; a coheſion by which the veſſel becomes ſo ſolid that it can contain fluids, even when unglazed; but for this very reaſon it would be moſt improper for cooling, which is promoted by the evaporation of the water that oozes through.

The Jeſuit Cabeus, who wrote a voluminous commentary on the Meteorologica of Ariſtotle, which was ready for the preſs in the year 1644, aſſures us, that with thirty-five pounds of ſaltpetre one can not only cool a hundred pounds of water, by quickly ſtiring it, but convert it alſo into ſolid ice; and for the truth of this aſſertion he refers

to

to an experiment which he made. Bartholin fays, that for the above account he can give him full credit; but the truth of it is denied by Duhamel, who fufpects that this Jefuit took the fhooting cryftals of the falt to be ice. This feems very probable; for no one, in latter times, has fucceeded to congeal water by faltpetre alone, without the help of fnow or ice. The powder which a duke of Mantua had, in the middle of the laft century, and by which, as the ftory goes, water, even in fummer, could be inftantaneoufly converted into ice, may, without doubt, have been only faltpetre.—Was this falt, therefore, confidered formerly as the caufe of the cold in the north-eaftern and other countries, becaufe it was ufed for cooling liquors? Even at prefent many farmers will fay that fuch or fuch a field is cold, becaufe it abounds with faltpetre.

Who firft conceived the idea of mixing fnow or ice with faltpetre and other falts, which increafes the cold fo much, that a veffel filled with water, placed in that mixture, is congealed into a folid mafs of ice that may be ufed on the table, we cannot with certainty determine. Latinus Tancredus, a phyfician and profeffor at Naples, whofe book *De fame et fiti* was publifhed in 1607, fpeaks of this experiment; and aflures us that the cold was fo much ftrengthened by faltpetre, that a glafs filled with water, when quickly moved in the above mixture, became folid ice.

In the year 1626, the well-known commentary on the works of Avicenna, by Sanctorius, was publifhed at Venice, in folio. The author in this work relates, that, in the prefence of many fpectators, he had converted wine into ice, not by a mixture of fnow and faltpetre, but of fnow and common falt. When the falt was equal to a third part of the fnow, the cold was three times as ftrong as when fnow was ufed alone.

Lord Bacon, who died in 1626, fays that a new method had been found out of bringing fnow and ice to fuch a degree of cold, by means of faltpetre, as to make water freeze. This, he tells us, can be done alfo with common falt; by which it is probable he meant unpurified rock-falt; and he adds, that in warm countries, where fnow was not to be found, people made ice with faltpetre alone; but that he himfelf had never tried the experiment. Mr. Boyle, who died in 1691, made experiments with various kinds of falt; and he defcribes how, by means of falt, a piece of ice may be frozen to another folid body. Defcartes fays, that in his time this was a well-known phenomenon, but highly worthy of attention.

Since that period the art of making ice has been fpoken of in the writings of all philofophers where they treated on heat and cold, and with many other experiments has been introduced into various books of receipts. It was then employed merely for amufement; and no one fufpected that it would ever be applied to an important purpofe in luxury. In the like manner Fugger's firft bills of exchange were faid to be ufeful only for gambling; and gun-powder was called a trifling difcovery for idle amufement!

In the beginning of the laft century drinking-cups made of ice and iced fruits were firft brought to the table; but, towards the end of that century, it appears that the French began to congeal, in this manner, all kinds of well-tafted juices, which were ferved up as refreshments at the tables of the great and wealthy. This was a grand invention for the art of cookery; which became common among

profeſſed cooks, both male and female, about the middle of the preſent century; and ſince that time our confectioners ſell ſingle glaſſes of iced articles to the ladies at our balls, and in the theatres.

Arſidas deſcribes in the middle of ſummer, at the table of Juba, freſh apples, one-half of which were encruſted with tranſparent ice. A baſon, made alſo of ice and filled with wine, was handed to him; and he was informed that to prepare all theſe things in ſummer was a new art. Snow was preſerved the whole year through in pits lined with ſtraw. Two cups made of copper were placed the one within the other, ſo as to leave a ſmall ſpace between them, which was filled with water; the cups were then put into a pail, amidſt a mixture of ſnow and unpurified ſalt coarſely pounded, and the water, in three hours, was converted into a cup of ſolid ice, as well formed as if it had come from the hands of a pewterer. In the like manner apples juſt pulled from the tree were covered with a coat of ice.

After brandy, from being a medicine, came into general uſe as a liquor at table, and was drunk in common by the populace, the Italians, above all, endeavoured to render it weaker and more pleaſant by various mixtures; and by raiſing its value to make it more reſpectable, and, at the ſame time, more uſeful to people of the firſt rank. That their wares might be diſtinguiſhed, with more certainty, they gave them the name of *liquori*; and under that appellation ſold them to foreign nations. The French were the firſt who adopted the uſe of theſe articles; particularly after the marriage of Hen. II. when duke of Orleans, with Catherine de Medicis, in the year 1533. This event brought to France great numbers of Italians, who made the French acquainted with theſe delicacies of their native country; and who taught them to prepare and to uſe them. They were the firſt, therefore, who made and ſold the fine *liqueurs* at Paris; and in order to ſerve thoſe who could not bear heating liquors, or rather to ſerve themſelves by filling their pockets with money, their ſucceſſors in this buſineſs invented, about the year 1630 or 1633, that beverage called *lemonade*, becauſe the juice of lemons or oranges was its chief component part. This liquor ſoon came into high repute, as it not only ſerved for cooling and refreſhing people during the ſultry heats of ſummer, but was even recommended by phyſicians againſt putrid diſeaſes.

The *limonadiers*, or venders of lemonade, endeavoured to increaſe the firſt property, which occaſioned the far greateſt conſumption, by the means of ice; and one of them, Procope Couteaux, an Italian from Florence, about the year 1660, conceived the happy idea of converting ſuch beverage entirely into ice, by a proceſs which had been before employed only by jugglers. The ready ſale which he found for his invention induced others to make articles of the like kind. His example, therefore, was followed by Le Fevre and Foi; and thoſe three, for ſome years, enjoyed a monopoly of this new-faſhioned commodity. About the year 1676, liquors cooled by, or changed into, ice, muſt, however, have been the principal things ſold by the *limonadiers*; for, being then formed into a company, the following delicacies were mentioned in the patent which they received on that occaſion: *Eaux de gelée et glaces de fruits et de fleurs, d'anis et de canelle, franchipanne, d'aigre de cetre, du ſorbec, &c.* There were at that time in Paris two hundred and fifty maſters in this employment,

ment. In 1690, when De la Quintiny wrote, iced liquors were extremely common.

People, however, long imagined that ſuch articles could be uſed only during the hot months of ſummer. In the year 1750, Dubuiſſon, ſucceſſor to the celebrated Procope, *au café de la rue des Foſsés de S. Germain des Près*, and author the *Art du diſtillateur*, began to keep ready prepared, daily, the whole year through, ices of every kind for the uſe of thoſe who were fond of them. At firſt, they were little called for, except in the dog-days; but ſome phyſicians recommended them in certain diſorders. Have the phyſicians then, by their opinion, done moſt ſervice to the venders of *liqueurs* and to cooks, or the latter to the phyſicians? This would make a fine ſubject for an inaugural diſſertation.—It is, however, certain, for we are told ſo by Dubuiſſon himſelf, that after two cures, in which ices had been of the greateſt ſervice, the more diſcerning part of the public made uſe of them in every ſeaſon of the year; and from hence the faſhion has become univerſal.

FOREIGN LITERATURE FOR MARCH, 1800.

GERMANY has lately abounded with romance-writers. We ſhall only ſpeak of a few who excel in invention and beauty of ſtyle. Haller and Wieland are well known. Göthe, whoſe happy choice of expreſſions, and nice diſcrimination of character, as his "Sorrows of Werter," and other works of the ſame kind, ſo abundantly atteſt, has the art of addreſſing his reader with the moſt captivating effect, and may juſtly be ranked as the firſt of German novel-writers. As a poet, he has claim to the higheſt praiſe, and in every point of view may be conſidered as one of the principal ornaments of German literature, and a writer who has eminently contributed to improve the taſte and language of his country.

Knigge, well known for a work in the manner of Lord Cheſterfield's Letters to his Son, abounding with fine rules of conduct, and inculcating morality very different from that which his lordſhip teaches, has likewiſe written a good novel, entitled, "The Romance of his Life," ſtrikingly characteriſtic of the manners of ſome of the little courts among the three hundred great and ſmall, that decorate the German empire.

No author approaches nearer to the elegance of the beſt French romance-writers, in the diſplay of fine ſenſations, than Schultz. His "Moritz" is a maſter-piece of the kind. His Tours are written in a very correct ſtyle; and there is perhaps no touriſt whoſe pictures of men and manners are delineated with a more delicate pencil than his.

Richer, known under the fictitious name of John Paul, is conſidered as the German Sterne. All his romances diſplay original genius; but it were to be wiſhed the author were leſs addicted to eccentricity and whim.

The romances of Muller abound in faithful pictures of the manners of Germany, and are written in an eaſy and agreeable ſtyle. Schummel and Wetzel likewiſe excel in correctneſs of diction and felicity of invention. With the two laſt Meiſſner may be joined, though the German critics do not allow him a very diſtinguiſhed

place among the claſſical writers; however, for happineſs of invention, great praiſe is due to him.

Nicolai, a man of much erudition, has written ſeveral fine romances, which diſplay great knowledge of human nature. His work on the ſtate of the Belles-Lettres, and the various literary undertakings he has promoted, have highly contributed to aſſiſt the progreſs of literature in general: and for theſe ſervices his country will ever remain his debtor.

La Fontaine, the author of many romances, which are the favourite reading of his countrymen, and, in moſt reſpects, deſervedly ſo, is an ingenious, though ſometimes diffuſive, writer; a circumſtance ariſing principally from the extreme fertility of his ideas. His works contain the pureſt morality, and are replete with fine remarks on human life in general.

Muſaus, Feſzler, Heinſe, and Thummel, have written romances, and each of them has his particular merit. The laſt is author of a fictitious tour through the ſouth of France, which is interſperſed with fine pieces of poetry.

Voſs excels in moſt kinds of poetical compoſition, but chiefly in the deſcriptive. His Louiſa is of the latter kind, and exhibits an enchanting picture of domeſtic happineſs. As a tranſlator of Greek and Roman poetry, his merit is tranſcendent. No nation can boaſt ſo good a verſion of the Iliad and Odyſſey, as thoſe produced by this favoured votary of the Muſes.

Burger, the delight of Germany, poſſeſſed true poetic fire, and excelled chiefly in the tender and pathetic. His ballads and ſongs are in every one's mouth, and the beauty of them is felt by people of all nations.

Stolberg (whoſe intereſting tour through Italy and the iſlands of Sicily has lately been ably tranſlated into Engliſh) ſtands almoſt unrivalled as a lyric poet, in the liſt of German bards. His ballads are peculiarly ſweet and tender; and his imitations of the Greek poets emulate their originals.

Matthiſſon is a natural painter of rural ſcenes, a correct and elegant verſifier, and a good poet.

The celebrated French aſtronomer, Lalande, is about to publiſh a "Hiſtory of the Heavens," *Hiſtoire Céleſte*. The work is at the preſs, and in a ſtate of conſiderable forwardneſs. He is alſo buſied in preparing for the preſs a "*Bibliographie Aſtronomique*."

The Royal Academy of Medicine at Barcelona has propoſed the following queſtion: Whether cold baths are uſeful or prejudicial in diſorders in the breaſt, and what their effects, according to circumſtances?

Mr. Humbolt has made ſeveral experiments on the ſubject of the germination of ſeeds in the oxy-muriatic acid, and has found that this acid has a remarkable effect in accelerating the progreſs of vegetation. The ſeeds of garden creſſes, when thrown into the fluid at the temperature of eighty-eight, ſhewed germs in three hours, while none were ſeen in water in twenty-ſix hours. Profeſſor Pohl, at Dreſden, produced in this manner vegetation from dried ſeeds in a collection of plants 120 years old; and Meſſrs. Jacquin and Vander Schott, at Vienna, have cauſed the growth of old ſeeds which in the botanical garden had reſiſted every other method.

Baron

Baron Racknitz is publiſhing a very ſplendid work at Leipſic, intended to exhibit the different ſtyles of ornamenting the interior parts of edifices, in different countries, and in different ages. Each number, of which three have already appeared, contains ſix folio coloured plates of inſides of buildings, and as many of appropriate furniture. With the letter-preſs of each, about 100 pages quarto, are twelve ſuitable vignettes. The price eight gold frederics, or 7l. ſterling. The plates do honour to the baron's taſte, and are executed in a ſuperb ſtyle; and the diſſertations accompanying them are of equal merit.

Mr. Vanquelin has made a new analyſis of the red lead ore of Siberia, and aſſerts that it contains a new metallic acid, to which he gives the name of *chrome*, on account of its property of colouring every ſubſtance combined with it.

ORIGIN OF THE NIGHT-WATCH.

THE eſtabliſhment of thoſe people who are obliged to keep watch in the ſtreets of cities during the night, belongs to the oldeſt regulations of police. Such watchmen are mentioned in the Song of Solomon, and they occur alſo in the book of Pſalms. Athens, and other cities of Greece, had at leaſt ſentinels poſted in various parts; and ſome of the *theſmothetæ* were obliged to viſit them from time to time, in order to keep them to their duty. At Rome there were *triumviri nocturni*, *cohortes vigilum*, &c.

The object of all theſe inſtitutions ſeems to have been rather the prevention of fires than the guarding againſt nocturnal alarms or danger; though in the courſe of time attention was paid to theſe alſo. When Auguſtus wiſhed to ſtrengthen the night-watch, for the purpoſe of ſuppreſſing nocturnal commotions, he uſed as a pretext the apprehenſion of fires only. The regulations reſpecting theſe watchmen, and the diſcipline to which they were ſubjected, were almoſt the ſame as thoſe for night-ſentinels in camps during the time of war; but it does not appear that the night-watchmen in cities were obliged to prove their preſence and vigilance by ſinging, calling out, or by any other means. Signals were made by the patroles alone, with bells, when the watchmen wiſhed to ſay any thing to each other. Singing by ſentinels, in time of war, was cuſtomary, at leaſt among ſome nations; but in all probability that practice was not common in the time of peace.

Calling out the hours ſeems to have been firſt practiſed after the erection of city gates, and to have taken its riſe in Germany; though indeed it muſt be allowed that ſuch a regulation would have been very uſeful in ancient Rome, where there were no clocks, and where people had nothing in their houſes to announce the hours in the night-time. During the day, people could know the hours after water-clocks had been conſtructed at the public expence, and placed in open buildings erected in various parts of the city. The caſe ſeems to have been the ſame in Greece; and rich families kept particular ſervants, both male and female, whoſe buſineſs it was to announce to their maſters and miſtreſſes certain periods of the day, as pointed out by the city clocks. Theſe ſervants conſiſted principally of boys and young girls, the latter being deſtined to attend on the ladies. It appears however, that in the courſe of time water-clocks were

were kept alſo in the palaces of the great: at any rate Trimalchio, the celebrated voluptuary, mentioned in Petronius, had one in his dining-room, and a ſervant ſtationed near it to proclaim the progreſs of the hours, that his maſter might know how much of his lifetime was ſpent; for he did not wiſh to loſe a ſingle moment without enjoying pleaſure.

There were then no clocks which ſtruck the hours, as has been already ſaid; and, as water-clocks were both ſcarce and expenſive, they could not be procured by labouring people, to whom it was of moſt importance to be acquainted with the progreſs of time. It would therefore have been an uſeful and neceſſary regulation to have cauſed the watchmen in the ſtreets to proclaim the hours, which they could have known from the public water-clocks, by blowing a horn, or by calling out.

It appears however, that people muſt have been ſoon led to ſuch an inſtitution, becauſe the above methods had been long practiſed in war. The periods for mounting guard were determined by water-clocks; at each watch a horn was blown, and every one could by this ſignal know the hour of the night; but we have met with no proof that theſe regulations were eſtabliſhed in cities during the time of peace, though many modern writers have not heſitated to refer to the night-watch in cities what alludes only to nocturnal guards in the time of war. The bells borne by the night watchmen were uſed only by the patroles, as we are expreſsly told, or to give ſignals upon extraordinary occaſions, ſuch as that of a fire, or when any violence had been committed. Cicero, comparing the life of a civil with that of a military officer, ſays, "The former is awaked by the crowing of the cock, and the latter by the ſound of the trumpet." The former therefore had no other means of knowing the hours of the night but by attending to the noiſe made by that animal. An ancient poet ſays, that the cock is the trumpeter which awakens people in the time of peace. The ancients indeed underſtood much better than the vulgar at preſent, who are already too much accuſtomed to clocks, how to determine the periods of the night by obſerving the ſtars; but people are not very fond of quitting their beds to look at the ſtars, which are not always to be ſeen.

It appears that night-watching was eſtabliſhed at Paris, as at Rome, in the commencement of its monarchy. De la Mare quotes the ordinances on this ſubject of Clothaire II. in the year 595, of Charlemagne, and of the following periods. At firſt the citizens were obliged to keep watch in turns, under the command of a *miles gueti*, who was called alſo *chevalier*. The French writers remark on this circumſtance, that the term *guet*, which occurs in the oldeſt ordinances, was formed from the German words, *wache*, *wacht*, the guard, or watch; and in like manner ſeveral other ancient German military terms, ſuch as *bivouac*, *landſquenet*, &c. have been retained in the French language. In the courſe of time, when general tranquillity prevailed, a cuſtom was gradually introduced of avoiding the duty of watching by paying a certain ſum of money, until at length permanent *compagnies de guet* were eſtabliſhed in Paris, Lyons, Orleans, and afterwards in other cities.

The eſtabliſhment of ſingle watchmen, who go through the ſtreets and call out the hours, ſeems to have been peculiar to Germany, and was copied only in modern times by their neighbours. The antiquity of

of it however we will not venture to determine. At Berlin, the Elector John George appointed watchmen in the year 1588; but in 1677 there were none in that capital, and the city officers were obliged to call out the hours. Montagne, during his travels in 1580, thought the calling out of the night-watch in the German cities a very ſingular cuſtom: "The watchmen," ſays he, "went about the houſes in the night-time, not ſo much on account of thieves as on account of fires and other alarms. When the clocks ſtruck, the one was obliged to call out aloud to the other, and to aſk what it was o'clock, and then to wiſh him a good night." This circumſtance he remaks alſo when ſpeaking of Inſpruck. Mabillon likewiſe, who made a literary tour through Germany, deſcribes calling out the hours as a practice altogether peculiar to that country.

The horn of thoſe watchmen ſeems to be the *buccina* of the ancients, which, as we know, was at firſt an ox's horn, though it was afterwards made of metal. Rattles, which are moſt proper for cities, as horns are for villages, ſeem to be of later invention. The common form, "Hear, my maſters, and let me tell you," is very old. The Chancellor von Ludwig deduces it from the Romans, who, as he ſays, were more liberal with the word Maſter, like the French with Meſſieurs; but the Roman watchmen did not call out, nor yet do the French at preſent. It ſeems therefore that the city ſervants or beadles were the firſt perſons appointed to call out the hours, as was the caſe at Berlin. Theſe called out to their maſters; which is ſtill the uſual appellation given to the magiſtrates in old cities, particularly in the Empire, and in Swiſſerland. At Gottingen the ancient form was only aboliſhed in 1791, and the watchmen call out now, "The clock has ſtruck ten, it is ten o'clock."

Watchmen who were ſtationed on ſteeples by day as well as by night, and who, every time the clock ſtruck, were obliged to give a proof of their vigilance by blowing a horn, ſeem to have been eſtabliſhed on a permanent footing, firſt in Germany, and perhaps before watchmen in the ſtreets. In England, there are none of theſe watchmen; and in general they are very rare beyond the boundaries of Germany. That watchmen were poſted on the tops of towers, in the earlieſt ages, to look out for the approach of an enemy, is well known, and has been ſufficiently proved by Faber. In the times of feudal diſſenſion, when one chief, if he called in any aſſiſtance, could often do a great deal of hurt to a large city, either by plundering and burning the ſuburbs and neighbouring villages, or by driving away the cattle of the citizens, and attacking ſingle travellers, ſuch precaution was more neceſſary than at preſent. The nobility therefore kept in their ſtrong caſtles watchmen, ſtationed on towers; and this practice prevailed in other countries beſides Ireland and Burgundy. It appears by the laws of Wales, that a watchman with a horn was kept in the king's palace. The German princes had in their caſtles, in the ſixteenth century, tower-watchmen, who were obliged to blow a horn every morning and evening.

At firſt, the citizens themſelves were obliged to keep watch in turns on the church-ſteeples, as well as at the town-gates; as may be ſeen in a police-ordinance of the city of Einbeck in the year 1573. It was the duty of theſe watchmen, eſpecially where there were no town clocks, to announce certain periods, ſuch as thoſe of opening and ſhutting the city-gates. The idea of giving orders to theſe watchmen

watchmen to attend not only to danger from the enemy but from fire alſo, and, after the introduction of public clocks, to prove their vigilance by making a ſignal with their horn, muſt have naturally occurred; and the utility of this regulation was ſo important that watchmen on ſteeples were retained even when cities, by the prevalence of peace, had no occaſion to be apprehenſive of hoſtile incurſions.

After this period perſons were appointed for the particular purpoſe of watching; and ſmall apartments were conſtructed for them in the ſteeples. At firſt they were allowed to have their wives with them; but this was ſometimes prohibited, becauſe a profanation of the church was apprehended. In moſt, if not in all, cities, the town-piper, or, as we ſay at preſent, town-muſician, was appointed ſteeple-watchman; and lodgings were aſſigned to him in the ſteeple; but, in the courſe of time, as theſe were too high and too inconvenient, a houſe was given him near the church, and he was allowed to ſend one of his ſervants or domeſtics to keep watch in his ſtead. This is the caſe ſtill at Gottingen. The city-muſician was called formerly the *kaufmann*, which name is ſtill retained there, as well as at the Hartz, in Halle, and ſeveral other places; and the ſteeple in which he uſed to dwell and keep watch was called the *kaufmann's thurm*. Theſe eſtabliſhments, however, were not general; and were not every where formed at a period equally early.

If we can credit an Arabian author, whoſe Travels were publiſhed by Renaudot, the Chineſe were accuſtomed, ſo early as the ninth century, to have watchmen poſted on towers, who announced the hours of the day as well as of the night, by ſtriking or beating upon a ſuſpended board. Marcus Paulus, who, in the thirteenth century, travelled through Tartary and China, confirms this account; at leaſt in regard to a city which he calls Quinſai, though he ſays that ſignals were given only in caſes of fire and diſturbance. Such boards are uſed in China even at preſent; and in Peterſburgh the watchmen, who are ſtationed at ſingle houſes or in certain parts of the city, are accuſtomed to announce the hours by beating on a ſuſpended plate of iron. Such boards are ſtill uſed by the Chriſtians in the Levant to aſſemble people to divine ſervice, either becauſe they dare not ring bells, or are unable to purchaſe them. The former is related by Tournefort of the inhabitants of the Grecian iſlands, and the latter by Chardin of the Mingrelians. The like means were employed in monaſteries, at the earlieſt periods, to give notice of the hours of prayer, and to awaken the monks. Mahomet, who in his form of worſhip borrowed many things from the Chriſtians of Syria and Arabia, adopted the ſame method of aſſembling the people to prayers; but, when he remarked that it appeared to his followers to ſavour too much of Chriſtianity, he again introduced the practice of calling out.

The ſteeple-watchmen in Germany are often mentioned in the fourteenth and fifteenth century. In the year 1351, when the council of Erfurt renewed that police ordinance which was called the *zuchtbrief*, 'letter of diſcipline,' becauſe it kept the people in proper ſubjection, it was ordered, beſides other regulations in regard to fire, that two watchmen ſhould be poſted on every ſteeple. A watchman of this kind was appointed at Merſeberg and Leiſnig ſo early as the year 1400. In the beginning of the ſeventeenth century the town-piper of Leiſnig lived ſtill in apartments in the ſteeple.

In

In the year 1563, a church-ſteeple was erected in that place, and an apartment built in it for a permanent watchman, who was obliged to announce the hours every time the clock ſtruck.

In the fifteenth century the city of Ulm kept permanent watchmen in many of the ſteeples. In the year 1452 a bell was ſuſpended in the tower of the cathedral of Frankfort on the Mayn, which was to be rung in times of feudal alarm, and all the watchmen on the ſteeples were then to blow their horns and hoiſt their banners. In 1476, a room for the watchman was conſtructed in the ſteeple of the church of St. Nicholas. In 1509, watchmen were kept both on the watch-towers and ſteeples, who gave notice by firing a muſket when ſtrangers approached. The watchman on the tower of the cathedral immediately announced, by blowing a trumpet, whether the ſtrangers were on foot or on horſeback; and at the ſame time hung out a red flag towards the quarter in which he obſerved them advancing. The ſame watchman was obliged, likewiſe, to blow his horn on an alarm of fire; and that theſe people might be vigilant day and night, both in winter and, ſummer, the council ſupplied them with fur-cloaks, ſeven of which, in the above-mentioned year, were purchaſed for ten florins and a half.

In the year 1496, the large clock was put up in the ſteeple of Oettingen, and a perſon appointed to keep watch on it. In 1580, Montagne was much ſurpriſed to find on the ſteeple at Conſtance a man who kept watch there continually; and who, on no account, was permitted to come down from his ſtation.

OF THE ORIGIN OF PHILOSOPHY.

MANKIND, in the firſt ages of ſociety, before the eſtabliſhment of law, order, and ſecurity, have little curioſity to find out thoſe hidden chains of events which bind together the ſeemingly diſjointed appearance of nature. A ſavage, whoſe ſubſiſtence is precarious, whoſe life is every day expoſed to the rudeſt dangers, has no inclination to amuſe himſelf with ſearching out what, when diſcovered, ſeems to ſerve no other purpoſe than to render the theatre of nature a more connected ſpectacle to his imagination. Many of theſe ſmaller incoherences, which in the courſe of things perplex philoſophers, entirely eſcape his attention. Thoſe more magnificent irregularities, whoſe grandeur he cannot overlook, call forth his amazement. Comets, eclipſes, thunder, lightning, and other meteors, by their greatneſs, naturally overawe him, and he views them with a reverence that approaches to fear. His inexperience and uncertainty with regard to every thing about them, how they came, how they are to go, what went before, what is to come after them, exaſperate his ſentiment into terror and conſternation. But our paſſions, as Father Malbranche obſerves, all juſtify themſelves; that is, ſuggeſt to us opinions which juſtify them. As thoſe appearances terrify him, therefore, he is diſpoſed to believe every thing about them which can render them ſtill more the objects of his terror. That they proceed from ſome intelligent, though inviſible, cauſes, of whoſe vengeance and diſpleaſure they are either the ſigns or the effects, is the notion of all others moſt capable of enhancing this paſſion, and is that, therefore, which he is moſt apt to entertain. To this too,

that cowardice and pusillanimity, so natural to man in his uncivilized state, still more disposes him; unprotected by the laws of society, exposed, defenceless, he feels his weakness upon all occasions; his strength and security upon none.

But all the irregularities of nature are not of this awful or terrible kind. Some of them are perfectly beautiful and agreeable. These, therefore, from the same impotence of the mind, would be beheld with love and complacency, and even with transports of gratitude; for whatever is the cause of pleasure naturally excites our gratitude. A child caresses the fruit that is agreeable to it, as it beats the stone that hurts it. The notions of a savage are not very different. The ancient Athenians, who solemnly punished the axe which had accidentally been the cause of the death of a man, erected altars and offered sacrifices to the rainbow. Sentiments not unlike these, may sometimes, upon such occasions, begin to be felt even in the breasts of the most civilized, but are presently checked by the reflection, that the things are not their proper objects. But a savage, whose notions are guided altogether by wild nature and passion, waits for no other proof that a thing is the proper object of any sentiment, than that it excites it. The reverence and gratitude, with which some of the appearances of nature inspire him, convince him that they are the proper objects of reverence and gratitude, and therefore proceed from some intelligent beings, who take pleasure in the expressions of those sentiments. With him, therefore, every object of nature, which by its beauty or greatness, its utility or hurtfulness, is considerable enough to attract his attention, and whose operations are not perfectly regular, is supposed to act by the direction of some invisible and designing power. The sea is spread out into a calm, or heaved into a storm, according to the good pleasure of Neptune. Does the earth pour forth an exuberant harvest? It is owing to the indulgence of Ceres. Does the vine yield a plentiful vintage? It flows from the bounty of Bacchus. Do either refuse their presents? It is ascribed to the displeasure of those offended deities. The tree, which now flourishes, and now decays, is inhabited by a Dryad, upon whose health or sickness its various appearances depend. The fountain, which sometimes flows in a copious and sometimes in a scanty stream, which appears sometimes clear and limpid, and at other times muddy and disturbed, is affected in all its changes by the Naiad who dwells within it. Hence the origin of Polytheism, and of that vulgar superstition which ascribes all the irregular events of nature to the favour or displeasure of intelligent though invisible beings, to gods, dæmons, witches, genii, fairies. For it may be observed, that in all polytheistic religions, among savages, as well as in the early ages of heathen antiquity, it is the irregular events of nature only that are ascribed to the agency and power of their gods. Fire burns, and water refreshes; heavy bodies descend, and lighter substances fly upwards, by the necessity of their own nature; nor was the invisible hand of Jupiter ever apprehended to be employed in those matters. But thunder and lightning, storms and sun-shine, those more irregular events, were ascribed to his favour, or his anger. Man, the only designing power with which they were acquainted, never acts but either to stop or to alter the course which natural events would take if left to themselves. Those other intelligent beings, whom they imagined, but knew not,

were

were naturally ſuppoſed to act in the ſame manner; not to employ themſelves in ſupporting the ordinary courſe of things, which went on of its own accord, but to ſtop, to thwart, and to diſturb, it. And thus, in the firſt ages of the world, the loweſt and moſt puſillanimous ſuperſtition ſupplied the place of philoſophy.

But when law has eſtabliſhed order and ſecurity, and ſubſiſtence ceaſes to be precarious, the curioſity of mankind is increaſed, and their fears are diminiſhed. The leiſure which they then enjoy renders them more attentive to the appearances of nature, more obſervant of her ſmalleſt irregularities, and more deſirous to know what is the chain which links them all together. That ſome ſuch chain ſubſiſts betwixt all her ſeemingly diſjointed phænomena, they are neceſſarily led to conceive; and that magnanimity, and cheerfulneſs, which all generous natures acquire who are bred in civilized ſocieties, where they have ſo few occaſions to feel their weakneſs, and ſo many to be conſcious of their ſtrength and ſecurity, renders them leſs diſpoſed to employ, for this connecting chain, thoſe inviſible beings whom the fear and ignorance of their rude forefathers had engendered. Thoſe of liberal fortunes, whoſe attention is not much occupied either with buſineſs or with pleaſure, can fill up the void of their imagination, which is thus diſengaged from the ordinary affairs of life, no other way than by attending to that train of events which paſſes around them. While the great objects of nature thus paſs in review before them, many things occur in an order to which they have not been accuſtomed. Their imagination, which accompanies with eaſe and delight the regular progreſs of nature, is ſtopped and embarraſſed by thoſe ſeeming incoherences; they excite their wonder, and ſeem to require ſome chain of intermediate events, which, by connecting them with ſomething that has gone before, may thus render the whole courſe of the univerſe conſiſtent and of a piece. Wonder, therefore, and not any expectation of advantage from its diſcoveries, is the firſt principle which prompts mankind to the ſtudy of philoſophy, of that ſcience which pretends to lay open the concealed connections that unite the various appearances of nature; and they purſue this ſtudy for its own ſake, as an original pleaſure or good in itſelf, without regarding its tendency to procure them the means of many other pleaſures.

Greece, and the Greek colonies in Sicily, Italy, and the Leſſer Aſia, were the firſt countries which, in theſe weſtern parts of the world, arrived at a ſtate of civilized ſociety. It was in them, therefore, that the firſt philoſophers, of whoſe doctrine we have any diſtinct account, appeared. Law and order ſeem indeed to have been eſtabliſhed in the great monarchies of Aſia and Egypt, long before they had any footing in Greece: yet, after all that has been ſaid concerning the learning of the Chaldeans and Egyptians, whether there ever was in thoſe nations any thing which deſerved the name of ſcience, or whether that deſpotiſm which is more deſtructive of ſecurity and leiſure than anarchy itſelf, and which prevailed over all the Eaſt, prevented the growth of philoſophy, is a queſtion which, for want of monuments, cannot be determined with any degree of preciſion.

The Greek colonies having been ſettled amid nations either altogether barbarous, or altogether unwarlike, over whom, therefore, they ſoon acquired a very great authority, ſeem, upon that account,

to have arrived at a conſiderable degree of empire and opulence before any ſtate in the parent country had ſurmounted that extreme poverty, which, by leaving no room for any evident diſtinction of ranks, is neceſſarily attended with the confuſion and miſrule which flows from a want of all regular ſubordination. The Greek iſlands being ſecure from the invaſion of land armies, or from naval forces, which were in thoſe days but little known, ſeem, upon that account too, to have got before the continent in all ſorts of civility and improvement. The firſt philoſophers, therefore, as well as the firſt poets, ſeem all to have been natives, either of their colonies, or of their iſlands. It was from thence that Homer, Archilochus, Steſichorus, Simonides, Sappho, Anacreon, derived their birth. Thales and Pythagoras, the founders of the two earlieſt ſects of philoſophy, aroſe, the one in an Aſiatic colony, the other in an iſland; and neither of them eſtabliſhed his ſchool in the mother country.

What was the particular ſyſtem of either of thoſe two philoſophers, or whether their doctrine was ſo methodized as to deſerve the name of a ſyſtem, the imperfection, as well as the uncertainty, of all the traditions that have come down to us concerning them, make it impoſſible to determine. It was in the ſchool of Socrates, however, from Plato and Ariſtotle, that philoſophy firſt received that form, which introduced her to the general acquaintance of the world.

DELETERIOUS EFFECTS OF CONFINED AIR.

THE following obſervations, on the effects of cloſe hot rooms, from Dr. Fothergill's Hints on Animation, cannot but be intereſting to thoſe who purſue faſhionable amuſements, in crouded rooms, at the expence of their health.

The mathematical exactneſs with which the doors and windows of elegant houſes are now contrived to ſhut, excludes the neceſſary ingreſs of freſh air. The diminutive ſize of the bedchambers is another capital error, and this is generally aggravated by the pernicious habit of ſleeping with the curtains cloſe drawn. The air thus confined, becomes replete with perſpirable matter, exhaling from the lungs, and all the inviſible ducts of the ſkin, and in this contaminated ſtate is reſpired for ſeveral hours; a circumſtance ſtrangely overlooked in health, and but too much neglected in ſickneſs. In putrid and contagious fevers, it renders the room not only very offenſive, but highly dangerous to the patient, the practitioner, and the attendants.

In cloſe crouded rooms deprived of ventilation, when the air becomes phlogiſticated to a certain degree, the candles grow uncommonly dim, and we begin to feel a diſagreeable ſenſe of oppreſſion, langnor, and faintneſs, till freſh air is re-admitted, when theſe ſymptoms preſently vaniſh; but ſhould this be neglected till the air is completely contaminated, as in the dreadful ſcene of Calcutta, the ſame fatal cataſtrophe would naturally enſue.

Flame and all burning bodies contaminate air in the ſame manner as reſpiration. If a lighted taper is placed under a large glaſs receiver, its light gradually dwindles till, at length, it expires, rendering the air highly noxious.—This ſhews the abſurdity of attempting to purify peſtilential air by lighting up large fires; which, inſtead of correcting its contagious principles, ſerve but to injure its reſpirable qualities. Hence, alſo, appears the glaring impropriety of that profuſion of

ſuperfluous

ſuperfluous fires and candles, which modern luxury has introduced into ball-rooms, aſſemblies, and all places of ſplendid entertainment; ſince theſe, by adding to the impurity of the air, already contaminated by reſpiration, cannot but prove very unfriendly to health. This, evidently, conſpires with other circumſtances in rendering the night air much leſs pure than that of the day. It may, therefore, ſerve to point out the pernicious tendency of that rage for late hours which ſo entirely poſſeſſes the polite world, and which begins to pervade even the inferior ranks of ſociety. The votaries of faſhion, in this country, ſeem to vie with each other in converting day into night, and night into day, by reverſing all the ſober rules of their wiſer anceſtors, and ſetting even nature at defiance.

A large portion of the time deſtined for repoſe is now ſpent in long vigils over the card table, or if it can be ſpared from game, it is devoted to midnight revels, or ſometimes, perchance, to books and ſerious lucubrations. During this ſolemn period, the animal and even vegetable tribes yield to the powerful impulſe of ſleep. Plants, inſtead of breathing forth dephlogiſticated air, now ſhed a baleful influence over the creation. While the external atmoſphere is overſpread with nocturnal fogs and exhalations; the hot air of the room ſhares the unwholeſome effluvia, now ſuperadded to the other contaminating cauſes. The night being thus conſumed in watching, the fragrant and refreſhing hours of morning, intended for invigorating exerciſes, are ſpent in relaxing ſlumbers; and thus from day to day is the ſame unnatural retrograde courſe of life uniformly repeated, an inconſiſtency certainly unworthy the wiſdom of ſuperior orders of the community, and particularly thoſe who preſide over the common weal, and conſider themſelves as complete connoiſſeurs in the art of *ſçavoir vivre*; not only ſtateſmen and ſenators, but divines and philoſophers, unite in thus deliberately yielding up their reaſon, and in becoming the willing ſlaves of this tyrannical cuſtom. Above all, it is to be lamented that ſo unnatural a habit is ſo much countenanced by the Britiſh ladies; thoſe arbiters of taſte and elegance, who controul even cuſtom, and from whoſe deciſion there is no appeal. Otherwiſe, I would beg to admoniſh the fair delinquents, that it is not only injurious to their health and vivacity, but alſo to their beauty and lovelineſs; for ſurely it is our duty to remind them, that whatever is ſubverſive of the former, muſt ultimately prove deſtructive to the latter.

ACCOUNT OF DAR-FUR.—FROM BROWNE's TRAVELS.

[*Mr. Browne is the firſt European who has been able to penetrate into the Empire of Dar-fur. The name of this place was firſt known in* 1790, *from Mr. Ledyard's Communications to the African Aſſociation. Mr. Browne's Journey may, therefore, be conſidered as a real and important Diſcovery.*]

BEFORE leaving Kahira, (Cairo,) ſays Mr. Browne, I was apprized that all commerce in Dar-fur was conducted by means of ſimple exchange. To carry on this in ſuch a way as not to be groſsly defrauded, eſpecially having my attention engroſſed by other objects, and in utter ignorance of the articles fit for bargain and ſale in this country, ſeemed wholly impoſſible; I therefore ſought for a perſon who

who might go through this buſineſs for me, at leaſt, with ſome ſhare of probity. Such a one aroſe to the notice of my friends there; and knowing nothing more of the man, as indeed I could not know any thing more, than the character they gave of him, I took him on the general recommendation of being honeſt, and underſtanding the buſineſs in which he was likely to be employed. The perſon recommended had been a ſlave-broker in the market of Kahira; a circumſtance which, had it had been known to me earlier, would probably have prevented my employing him. Till the moment of departure, I obſerved in him keenneſs, but no fraud, and in general that ſubmiſſive acquieſcence and abſolute devotion to the will of the ſuperior, for which the lower claſs of Kahirines are externally, at leaſt, remarkable. The hour for commencing our march, however, ſeemed, with him, the ſignal for diſobedience and inſulting behaviour; and we were not yet far removed from the confines of Egypt, when this miſconduct was carried to ſuch an exceſs, that I once levelled my gun at him, with a view of inſpiring terror. The merchants around us interfered, and, for the time, this paſſed off; but the man only ſought an opportunity of revenge, which the prejudices of the people of Sondan, in direct oppoſition to my former information, too ſoon afforded him means to gratify.

The letters with which I was provided for different merchants in this diſtrict, under whoſe roof I might have had a ſafe lodging, could be of no uſe to me till I had ſeen the ſultan; for, till then, no perſon knew in what character to receive me. The object of this man, therefore, was to prevent my introduction to the ſultan, and to preclude me from any opportunity of repreſenting my caſe. We were no ſooner arrived at Sweini, than he found means to employ one of his aſſociates, who had been ſome years eſtabliſhed in the place, to go to the monarch, and infuſe into his mind ſuſpicions of me as a Frank and an infidel, who came to his country for no good purpoſe, and whoſe deſigns it behoved him to guard againſt; and to ſuggeſt to him that it would not be proper I ſhould remain at large, nor yet immediately come to his preſence, but that ſome perſon ſhould be commiſſioned to watch over and report my actions, and thus fruſtrate my ſuppoſed evil intentions. He added, as I afterwards found, many anecdotes, falſified or exaggerated, of the inquiries I had made, the way I had been employed, and my general behaviour on the road.

Nor was the villain himſelf idle during the time his coadjutor was thus laudably engaged. I have already mentioned, that there were no doors to the apartments of the houſe we were in. He took advantage of this circumſtance, and my momentary abſence, to take out of a box, which had been broken on the road, a quantity of red coral, the moſt valuable article in my package. As the box remained locked, it was not till long after that I diſcovered this loſs. By the help of this commodity, he expected to make his way with the great. At the end of a few days this agent returned, bearing a ſpecious letter, impreſſed with the ſultan's ſeal; ordering that no officer on the road ſhould preſume to detain me, or take any thing from me, till I came to the houſe of Ibrahim el Wohaiſhi (the name of this very agent) in Cobbé, where I was to reſt myſelf, till further orders ſhould be given for my admiſſion to his preſence. I was not, indeed, at that time, privy to the plot; yet, if I could have obtained a knowledge of it, it might not have been eaſy, immediately, to counteract its influence; nevertheleſs,

nevertheleſs, I ſuſpected ſomething might have been practiſed againſt me. An order from the deſpot, which, while it was to protect me from his officers on the road, obliged me to confine myſelf to a particular ſpot, was a matter of ſurpriſe to me: but ſubmiſſion was unavoidable, as I was at that time unprovided even with the means of remonſtrance. Had the machinations of my adverſaries, which went much further than my confinement, having been actually employed againſt my life, been at that time known to me, this ſeverity would not have cauſed any aſtoniſhment, and the means of redreſs might have been leſs doubtful. But ſuſpenſe filled the void of poſitive ſuffering—a ſuſpence to which no apparent remedy ſuggeſted itſelf. Thoſe who had known me in Egypt, or on the road, were diſperſed to the eaſt and weſt, and the people of the place were ill diſpoſed to form any communication with me, being filled with religious horror of one ſuppoſed an infidel, but of yet undefined impiety, and whoſe colour, variouſly regarded as the ſign of diſeaſe, the mark of divine diſpleaſure, or, at leaſt, the unequivocal proof of inferiority of ſpecies, had averted their wonted hoſpitality, cloſed their compaſſion, and inflamed their perſonal pride and religious fury.

It was in this ſituation that, ſeeing no means of immediate relief, I began to feel impatience; which, as I continued in a ſtate of perfect inactivity, communicated the more rapidly its pernicious influence to my ſtate of health. On the fourteenth day after my arrival, I was attacked with a violent fever, attended with extreme pain in the head. How long it laſted I cannot preciſely ſay, having, on the ſecond day, loſt my recollection. It was afterwards recalled by the effect of a dyſentery, which laſted for two days, and left me too weak to aſſiſt myſelf. I had reflection enough to know, that, of the aliments there to be procured, ſcarcely any could be found that would not be pernicious. After the firſt attack, therefore, I confined myſelf to the uſe of bark and water, which laſt I drank in great quantities.

A little more than a month had elapſed, when, the ſymptoms appearing to diminiſh, I again preſſed to be permitted to viſit the reſidence of the ſultan. But I had reaſon to regret my impatience; for, having, at length, obtained leave, I proceeded to El-Faſher, only to repeat my ſuffering. The rainy ſeaſon was almoſt at an end, but the air, which ſtill continued inſalubrious, fatigue, and anxiety, renewed the malady, which, after extreme abſtinence, and having gone through the ſhort catalogue of remedies which I had had the precaution to take with me, I found unabated. Exceſſive headachs, laſſitude, thirſt, occaſional conſtipation, ſucceeded by extreme irritation of the viſcera, continued for ſeveral months to ſhow the inefficacy of my precautions, and to incapacitate me from all perſonal exertion. At length, the heat of the enſuing ſummer gradually increaſing, and producing regular and continued tranſpiration, and the ſtate of the air, then meliorated, having removed the cauſe of indiſpoſition, it was not long before I gained a certain degree of ſtrength.

Arrived at El-Faſher, I was firſt introduced to the melek Miſellim, one of the principal miniſters. This man, when young, had been a ſlave, and engaged in domeſtic offices of the palace, but having been detected uſing ſome familiarities with one of the women, the monarch had ordered him to be deprived of the enſigns of manhood. Ignorant and uneducated, he appeared to have a certain quickneſs of apprehenſion, which, together with uncommon gaiety of humour, had rendered

rendered him acceptable at court, where he appeared more as a buffoon than a minister of state. He received me with a rude stare, as an object he was unused to, which was followed by a mingled smile of contempt and aversion. He was seated with some other of the royal attendants, under a kind of awning of cotton cloth, on a mat spread upon the sand. After the common salutations, the melek and his company entered into conversation on the nature of my visit to the country; and each made his remarks on my person, and offered his conjectures as to my character and intentions.

This conversation was partly carried on in their vernacular idiom, partly in Arabic. At length, a wooden bowl of polenta, and another of dried meat, were set before them. My illness deprived me of all inclination to eat; and observing the company not much inclined to invite me to join them, and yet embarrassed how to avoid that ceremony, I relieved them by declining it, and desiring them to begin. When they were satiated, and they lose no time in eating, a great number of foolish questions were asked me about Europe, some of which I waved, and satisfied them as to others in the best manner I was able.

One of the principal questions was, whether the English paid the *jizié* to the Othman emperor? This, as is well known, is a capitation tax, paid by the Greeks and others, for liberty to worship after their own manner. I replied, that England was so remote from the imperial dominions, that no war between the two countries could well have place, till all the rest of Europe should have submitted to the Mahometan arms, which had not hitherto come to pass; but that, for the purposes of trade, the inhabitants of the one country frequented the other, and by mutual agreement were considered as personally secure; that presents were occasionally made by the British king to the emperor, in token of amity, but not as a mark of subjection; and that the latter, on his part, as it did not appear that the decrees of the Almighty had fixed this as the moment of general conversion to the true faith, in virtue of his dispensing power, and swayed by the general law of hospitality to strangers, sanctioned by the authority of the prophet, judged it lawful, and even a matter of political expediency, to tolerate such Europeans as conducted themselves inoffensively in his dominions, though they did not pay the jizié. I thought it necessary to enter into this explanation of the terms on which I conceived myself to stand in relation to them, having by this time learned how rigidly they were disposed to adhere to the letter of the prophet's dictum, namely, that no infidels are to be spared but such as pay the capitation tax. When I observed they grew tired of asking questions, I seized the opportunity of explaining why I came there, and what favour I expected would be shewn me.

"Melek," said I, "having come from a far distant country to Misr (Kahira), I was there made acquainted with the magnificence, the extended empire, and, above all, the justice and hospitality, of King Abd-del-rachmân, whose dominion be eternal! Having been used to wander over various countries, as a derwish, to learn wisdom from the aged, and to collect remedies for diseases from the herbs that spring in various soils, I grew desirous of seeing Dar-fur. I was told that my person and property would be secure, and that permission would be given me to go wherever I might think proper. Since my arrival within the confines, I have found that all these

aſſurances were fallacious: my inclinations have been thwarted, my perſon treated with indignity, and my property plundered, while compliance has been refuſed even to my moſt reaſonable demands. I aſk redreſs.—What I have already ſuffered from the officers of the ſultan is paſt, and cannot now be remedied, but I deſire protection for the future. I deſire the puniſhment of the man who has robbed me, and reſtitution of what has been taken. Nor is this all. I particularly deſire permiſſion to go to Sennaar, in order to proceed to Habbeſh. I was prevented from going there, laſt year, by the ſtraight road. Habbeſh is a Chriſtian country, abounding in ſlaves and gold. There are alſo many herbs valuable in medicine. Being there, I may eaſily join my countrymen, merchants who come to Moccha, in the Bahr Yemeni. I deſire the ſultan will allow me to proceed thither: and, if it be neceſſary, grant me his protection, and three or four perſons, deſerving confidence, to attend me to the frontiers of Kordofan. I have a ſmall preſent to offer him, conſiſting of ſuch things as my circumſtances permitted me to bring. I hope he may not refuſe to receive it, and to grant me the favour I aſk." He anſwered, "Merchant, you are welcome to the Dar. The king is kind to ſtrangers, and he will favour you in all you wiſh. Whatever you want you have only to demand. He has ordered a ſack of wheat and four ſheep to be ſent you.—At this time it is not poſſible to paſs through Kordofan. The ſultan has a great army there, and when the country ſhall be in ſubjection to him you may paſs unmoleſted. When you are admitted to his preſence, you will tell him who has robbed you, and what you have loſt, and he will cauſe it to be reſtored." It was now the hour of prayer, and when the company commenced their ablutions I retired.

During three or four days enſuing, I ſuffered ſo violent a relapſe as to be unable to perform the common offices of life, and even to ſuppoſe that it was nearly at an end. The moment any ſymptom of amelioration appeared, I ſent word to the melek that it was my wiſh to be introduced to the ſultan, and then, as ſoon as poſſible, to be diſmiſſed. No reply was made to this meſſage: but the following day he came to the tent, with ſome of his attendants, and deſired to ſee the merchandize that I had brought with me. As to part of the articles, conſiſting of wearing apparel ſuited to the great, &c. I very readily complied: but this was not ſufficient.—The melek inſiſted alſo on ſeeing the contents of a ſmall cheſt, which chiefly held articles uſeful to myſelf, but not deſigned for ſale. There were alſo in it ſome Engliſh piſtols, of which I intended to avail myſelf as preſents at Sennaar, or wherever elſe I might be able to penetrate. I therefore poſitively refuſed to open the cheſt. He then threatened to have it broke open.—I remained unmoved.—At length, his attendants proceeding to break it open, Ali Hamad, the man who was with me, with his uſual villany, took the key from its concealment, and opened the box. Every thing was taken out and examined minutely—many ſmall articles appeared no more. The piſtols were reſerved to be taken by the ſultan (after a violent but fruitleſs altercation) at the valuation made by his own ſervants: and my teleſcopes, books, of which they knew not the uſe, wearing apparel, &c. were graciouſly left me.

The valuation was to be made the following day, which was done quite againſt my conſent, and in contempt of my warmeſt remon-

ſtrances. Some part of the articles were ſtated at their full value, and others far below it. The whole was eſtimated at thirty-eight head of ſlaves, being at the market price worth about eighty, excluſively of a preſent of value for the ſultan. A pair of double-barrelled piſtols, ſilver-mounted, which coſt twenty guineas in London, were valued at one ſlave, which is commonly purchaſeable, by thoſe who are experienced in that traffic, for the value of fifteen piaſtres in Egyptian commodities, (about 3l. 15s.) On this I exclaimed, that if they meant to plunder, and bargain and ſale were not conducted in this country by conſent of the parties, but by force, it would be better to take the whole gratis.—No anſwer was made, but the day following two camels were brought me as a preſent.

The violent manner in which my property had been ſeized, and the general ill treatment I had received, much augmented my diſorder, already ſevere. I had now been fifteen days in the tent, expoſed to great variations of temperature, it being at the cloſe of the rainy ſeaſon, and ſo entirely diſregarded, that, though tormented with thirſt, I could rarely obtain water to drink. I judged that the only means of reſtoration which remained were, to return to Cobbé, and avail myſelf of the ſhelter of a clay-houſe, and that privacy and quiet, the want of which I had ſo ſenſibly felt. Being in poſſeſſion of the greater part of my property, and having left me only ſo much as would ſupply the wants of a few months, the melek did not ſeem very anxious about my ſtay. I hired two Arabs, and with the camels that had been given me, and the property that remained, made my way on the third day to the place whence I came.

In the intervals of my illneſs, I viſited the chief perſons of the place; and as the eyes of the people became habituated to me, I found my ſituation growing ſomewhat more tolerable. Idle, as I certainly was, during this winter, with reſpect to the immediate objects of my voyage, I grew of courſe more familiar with the manners and particular dialect of the country: for the Arabic, which is ſpoken here, differs materially from the vernacular idiom of Egypt. I ſeldom, indeed, joined in the parties where *meriſi* (a fermented liquor) was introduced, becauſe it was important not to hazard becoming concerned in the riots, which are the frequent conſequence of their inebriation. But I was often diverted by the mode of conducting a bargain, which ſometimes laſts for ſeveral hours; and I liſtened, perhaps not wholly without inſtruction, to their legal arguments, and the cool diſcuſſions of right, which are the conſequence of often ſubmitting diſputes to arbitration. I could ſmile at the quibbling diſtinctions, by which the niceties of external obſervance are ſettled, but I had generally reaſon to be ſatisfied with their theory of morals.

It is uſual for the graver men, during the heat of the day, to ſit and converſe under a ſhade erected for the purpoſe. When convalescent, I ſeldom failed to be of this party; for though the converſation contained few ſallies of wit, much leſs profundity of obſervation, yet it was carried on without ill humour, with mutual forbearance, and on the whole in an equable courſe. Perhaps, indeed, the ſociety appeared leſs dull, as diſſipating reflections which my ſituation rendered unpleaſant.

The following ſummer (1794), having in ſome degree recovered my ſtrength, I determined to go and reſide for a time near the ſultan, as well

well to have an opportunity of ſupplicating for redreſs of what I had already ſuffered, as to ſeize any moment that might offer of preſſing my requeſt for permiſſion to advance. On leaving the houſe which I had inhabited at Cobbé, a diſpute had ariſen with the owner of it, who wanted me to ſign a declaration that nothing had been loſt during my reſidence in his houſe. This, which was directly the reverſe of the truth, I refuſed to do: and in conſequence he called an aſſembly of *fukkara*, or ſacred judges. The reſult, after much conteſt, ſerved to ſkreen him from the reſponſibility legally attached to his conduct, without averting the charge, and determined me never to return to his roof.

On my arrival at El Faſher, my good friend the melek Miſellim being employed by his maſter in the ſouth, I went under the protection of the melek Ibrahim, one of the oldeſt perſons in authority there, and lodged myſelf (as all ſtrangers are obliged to lodge in the incloſure of ſome of the natives) in the houſe of a man named Muſa, now only an inconſiderable officer, though one of the ſons of Sultan Bokar. This Muſa was one of the moſt upright and diſintereſted men I have known in that country, and indeed among the Mohammetans of any country. Calm and dignified in his demeanour, though poor and deſtitute of power, he never inſulted, though his religion taught him to hate. No motive could have been ſtrong enough to induce him to eat out of the ſame plate with a Caffre, but he was punctilioufly obſervant of the rights of hoſpitality which that religion alſo dictated, and daily provided me with a portion of food from his kitchen. He often ſaid, that, as it was a precept of my faith to hate the prophet, he was bound to encourage the ſame ſentiment towards me; but that he was neither obliged to injure me, nor excuſed in doing ſo.

The melek Ibrahim is a man of about ſixty years of age; tall, but not athletic, and characteriſed by the roughneſs rather than the expreſſion of his features. He has no beard, and the little hair which remains either on his head or face is grey. His manners, and even the motions of his body, are ungraceful, and without the eaſe of ſuperior rank, or the majeſty of ſuperior intellect. Yet his underſtanding ſeems clear and comprehenſive, and his ſagacity not unworthy the ſtation aſſigned him—one of the firſt in the empire. He is indeed a bigot in matters of faith, but in all that concerns not the prevailing ſuperſtition, his judgment is cool, and little liable to error. He once held the reputation of integrity above the reſt of his order, but his preſent riches render this character ambiguous. Generoſity, however, holds no place among his virtues. The uniform tenor of his life is governed by mean avarice: and though the moſt opulent man in the empire, except the ſultan, ſo little does he poſſeſs of Arabian hoſpitality, that the man uſed to be regarded as unhappy who went ſupperleſs to his evening councils. He had never yet ſeen a Frank, and regarded me nearly as the Britiſh or French commonalty view the dwar fiſh Goitres of the Alps. I could collect from his converſation that he looked on Europeans as a ſmall tribe, cut off by the ſingularity of colour and features, and ſtill more by their impiety, from the reſt of mankind.

When I entered the court where he was ſitting, he bade me welcome, and received with complacency a preſent which, in compliance with cuſtom, I brought on the occaſion. He even thanked me for

it; but expreſſed ſtrong ſurprize at my journey to Dar-Fur. I complained of the injuries done me, and he aſſured me of redreſs for the paſt, and protection for the future. At the ſame time it was clear that he eſteemed the preſent a tribute, and conceived that perſonal ſafety was more than I could reaſonably expect. His conduct afterwards was a farther proof of his ſentiments: for, though I remained at El-Faſher three entire months, I ſaw him only when I forced myſelf on his notice, and experienced no return of civility, much leſs any compenſation for what I had already ſuffered.

During this time I was ſolicitous to attend regularly the levees of the ſultan, which are from ſix in the morning till ten; but could very rarely obtain admittance, and when I did, had no opportunity of ſpeaking. Whether the general prejudice againſt me, or the machinations of my enemies, produced this pointed diſregard, which, as I ſaid, a ſtranger ſcarcely ever experienced before, circumſtances afforded no ſufficient ground to decide. I ſuſpected the former; but probably both had their ſhare.

On returning to my temporary habitation, a ſhed, as was uſual with me on the ſun's approach to the meridian, fatigued with heat, oppreſſed with thirſt, and not without inclination for food, my repaſt was commonly a kind of bread gently acid, moiſtened with water. I grew acquainted with a few of the people who attended the court, as well as with many ſtrangers who were ſuitors there. Their converſation ſometimes amuſed me, but more often I found their continued and unmeaning queſtion haraſſing and importunate, and their remarks either abſurd or offenſive. The tedium of ſolitude, unfurniſhed with the means to render it agreeable, was however removed. I occaſionally frequented the markets, which are uſually held from four o'clock in the afternoon till ſun-ſet. But, my perſon being there ſtill ſtrange, the crowd that aſſembled inclined me to a precipitate retreat.

The Furians here ſeemed unacquainted with the ſports of the field. I occaſionally went out with a gun after the commencement of the rainy ſeaſon, when the face of the country became green: but little offered itſelf worthy of attention, either in the animal or vegetable kingdoms. During the early part of the ſummer, the earth had been parched, and deſtitute of all vegetation.

After waiting in fruitleſs expectation at El Faſher, as the time of my departure was drawing near, an accident happened, which, though not of the moſt pleaſing kind, contributed to make me noticed, and obtained for me at length an interview with the ſultan.—The ſlaves of the houſe uſed frequently to collect round me, as if to examine a ſtrange object—I joked occaſionally with them, without any other view than that of momentary relaxation. One day, as I was reading in the hut, one of them, a girl about fifteen, came to the door of it, when, from a whim of the moment, I ſeized the cloth that was round her waiſt, which dropped, and left her naked. Chance ſo determined, that the owner of the ſlave paſſed at the moment, and ſaw her. The publicity of the place precluded any view of farther familiarity, but the tumult which ſucceeded appeared to mark the moſt heinous of crimes, and to threaten the moſt exemplary vengeance. The man threw his turban on the earth, and exclaimed—"Ye believers in the prophet, hear me! Ye faithful, avenge me!" with other ſimilar expreſſions. "A Caffre has violated the property of a deſcendant of Mohammed," (meaning himſelf, which was ut-

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ferly falſe.) When a number of people was collected around him, he related the ſuppoſed injury he had received in the ſtrongeſt terms, and exhorted them to take their arms and ſacrifice the Caffre. He had charge a carbine, and affected to come forward to execute his threats, when ſome one of the company who had advanced fartheſt, and ſaw me, called out to the reſt that I was armed, and prepared to reſiſt.

It was then agreed among the aſſembly that ſome method of puniſhment might be found that promiſed more ſecurity and profit to the complainant, and would be more formidable to the guilty. The man whom I have already mentioned as my broker, was to take the ſlave, as if ſhe had really been violated, and agreed to pay whatever her maſter ſhould charge as the price. The latter had the modeſty to aſk ten head of ſlaves. He was then to make his demand on me for the value of ten ſlaves, and if I carried the matter before the cadi, which he ſuppoſed I ſhould hardly venture to do, he had ſuborned witneſſes to prove that I had received of him property to that amount.

On my removal from Cobbé to El-Faſher, I had cauſed my ſmall remaining property, among which were few articles of value, but many of much uſe to me, to be lodged in the houſe of Hoſſein (the owner of the ſlave) and his companion. On my return thither, which happened within a few days after the accident, I claimed it: they reſiſted, as they alleged, at the ſuit of my broker, and would not deliver it till the value of ten ſlaves ſhould be paid to him. I had from the firſt conſidered their conduct as ſo violent, that, if it reached the ears of the government, the claim muſt unqueſtionably be abandoned; and indeed my adverſaries had only reſted their expectations on the timidity which they had been accuſtomed to obſerve in Chriſtians of the country, whoſe accuſation and condemnation are in fact the ſame. I had not neglected to give the tranſaction all the notoriety I could, without having recourſe to public authority, and thoſe to whom I had applied were decidedly in my favour: I therefore now went to my adverſaries, Hoſſein and his companion, and in their preſence offered to Ali Hamad a promiſſory note for the value of ten ſlaves, at the market price on my arrival in Kahira. It was refuſed; and, my cheſt, in which were ſome German dollars and other articles, was ſtill detained by them; the reſt was given up.

In the mean time much had been ſaid on the ſubject, both among the natives and foreigners; and the flagrant injuſtice I was likely to ſuffer forcibly ſtruck all that were not in a ſtate to profit by it, but none more than the Egyptian merchants: they were indignant to ſee that ſo enormous a penalty ſhould be forfeited to thoſe who had no claim but effrontery to demand it; and that they had no ſhare, and were too numerous to expect to be all rewarded for connivance; accordingly ſome of them were diligent in carrying the news to the monarch.

I had indeed been told that the ſultan was apprized of the tranſaction previouſly to my departure from El-Faſher, and that he intended to grant me redreſs; but after waiting about fifteen days, without hearing any thing farther of his intentions, weary of ſuffering, I determined to return. I had been there but a ſhort time when a *fulganawy* (meſſenger) arrived expreſs from the court, with orders for me to repair to El-Faſher immediately. The object of the

the meſſage was kept in profound ſecrecy, nor could I diſcover whether it portended good or evil: I left Cobbé the ſame evening, and arrived at the end of my journey the following day, about noon.

I repaired, as before, to the melek Ibrahim, who, on the following day, introduced me at the public audience. The ſultan, as he retired to the palace, after it was over, ordered all the parties to appear. Being come within the inner court, he ſtopped the white mule on which he was mounted, and began a ſhort harangue, addreſſing himſelf to Hoſſein and Ali Hamad, my ſervant, in which he cenſured, in a rapid and energetic ſtyle, their conduct towards me. "One," ſaid he, turning to Ali, "calls himſelf Wakil of the Frank; if he were a ſherif and a muſlim, as he pretends, he would know that the law of the prophet permits not a muſlim to be Wakil to a Caffre: an other calls himſelf his friend—but both are agreed in robbing him of his property, and uſurping the authority of the laws. Henceforth I am his Wakil, and will protect him." He then ordered all the parties to repair to the houſe of Muſa Wullad Jelſun, melek of the jelabs, under whoſe appropriate juriſdiction are all foreign merchants. Here it may not be improper to relate briefly how I had been before received by the ſultan.

On my firſt audience I was too ill to make much obſervation: I was ſeated at a diſtance from him; the viſit was ſhort, and I had no opportunity of opening a converſation. He was placed on his ſeat (*curſi*) at the door of his tent. Some perſon had mentioned to him my watch, and a copy of Erpenius's Grammar, which I had with me. He aſked to ſee both; but after caſting his eyes on each he returned them. The preſent I had brought was ſhewn him, for which he thanked me, and roſe to retire.

During the following ſummer, the firſt time I got admiſſion to him, he was holding a diwan in the outer court. He was then mounted on a white mule, clothed with a ſcarlet *beniſh*, and had on his head a white turban; which however, together with part of his face, was covered with a thick muſlin. On his feet were yellow boots, and the ſaddle on which he was ſeated was of crimſon velvet, without any ornament of gold or ſilver. His ſword, which was broad and ſtraight, and adorned with a hilt of maſſy gold, was held horizontally in his right hand. A ſmall canopy of muſlin was ſupported over his head. Amid the noiſe and hurry of above a thouſand perſons who were there aſſembled, I was unable to make myſelf heard, which the nature of my ſituation obliged me to attempt, though not exactly conformable to the etiquette of the court, that, almoſt to the excluſion of ſtrangers, had appropriated the diwan to the troops, the Arabs, and others connected with the government.

On another occaſion, I contrived to gain admittance to the interior court by a bribe. The ſultan was hearing a cauſe of a private nature, the proceedings on which were only in the Furian language. He was ſeated on a kind of chair, which was covered with a Turkey carpet, and wore a red ſilk turban; his face was then uncovered: the imperial ſword was placed acroſs the knees, and his hands were engaged with a chaplet of red coral. Being near him, I fixed my eyes on him, in order to have a perfect idea of his countenance, which, being ſhort-ſighted, and not thinking it very decent to uſe a glaſs in his preſence, I had hitherto ſcarcely found an opportunity of acquiring. He ſeemed evidently diſcompoſed at my having obſerved him

thus, and the moment the eauſe was at an end he retired very abruptly. Some perſons to whom I afterwards remarked the circumſtance ſeemed to think that his attendants had taught him to fear the magic of the Franks, to the operation of which their habit of taking likeneſſes is imagined by ſome of the Orientals to conduce. He is a man rather under the middle ſize, of a complexion aduſt or dry, with eyes full of fire, and features abounding in expreſſion. His beard is ſhort but full, and his countenance, though perfectly black, materially differing from the negro; though fifty or fifty-five years of age, he poſſeſſes much alertneſs and activity.

At another of my viſits I found him in the interior court, ſtanding, with a long ſtaff tipped with ſilver in his right hand, on which he leaned, and the ſword in his left. He then had choſen to adorn his head with the folds of a red ſilk turban, compoſed of the ſame material as the weſtern Arabs uſe for a cinture. The melek Ibrahim preſented him, in my name, with a ſmall piece of ſilk and cotton, of the manufacture of Damaſcus. He returned anſwer, "*Balak ulla fi!*"—"May the bleſſing of God be on him!"—a phraſe in general uſe, on receiving any favour; and inſtantly retired, without giving me time to urge the requeſt of which I intended the offering ſhould be the precurſor. It is expected of all perſons that, on coming to El-Faſher, they ſhould bring with them a preſent of greater or leſs value, according to the nature of the buſineſs in hand. It is no leſs uſual, before leaving the royal reſidence, to aſk permiſſion of the ſultan for that purpoſe. With this latter form, which was to me unpleaſant, I ſometimes complied, but more frequently omitted it. But, on this occaſion, having been long reſident there, I thought fit to make a laſt effort to promote my deſign. The day preceding that which I had fixed for my return happened to be a great public audience. I found the monarch ſeated on his throne (*curſi*) under a lofty canopy, compoſed not of one material, but of various ſtuffs of Syrian and even of Indian fabric hung looſely on a light frame of wood, no two pieces of the ſame pattern. The place he ſat in was ſpread with ſmall Turkey carpets. The meleks were ſeated at ſome diſtance on the right and left, and behind them a line of guards, with caps, ornamented in front with a ſmall piece of copper and a black oſtrich-feather. Each bore a ſpear in his hand, and a target of the hide of the hippopotamus on the oppoſite arm. Their dreſs conſiſted only of a cotton ſhirt, of the manufacture of the country. Behind the throne were fourteen or fifteen eunuchs, clothed indeed ſplendidly in habiliments of cloth or ſilk, but clumſily adjuſted, without any regard to ſize or colour. The ſpace in front was filled with ſuitors and ſpectators, to the number of more than fifteen hundred.

A kind of an hired encomiaſt ſtood on the monarch's left hand, crying out, *à pleine gorge*, during the whole ceremony, "See the buffaloe, the offspring of a buffaloe, a bull of bulls, the elephant of ſuperior ſtrength, the powerful ſultan Abd-el-rachmanel-raſhid! May God prolong thy life!—O maſter—may God aſſiſt thee, and render thee victorious!"

From this audience, as from thoſe which had preceded it, I was obliged to retire as I had come, without effecting my purpoſe. I was told there were occaſions when the ſultan wears a kind of crown, as common with other African monarchs; but of this practice I had no opportunity to bear teſtimony. When he appeared in public, a number

number of troops, armed with light ſpears, uſually attended him, and ſeveral of the ſlaves were employed to bear a kind of umbrella over his head, which concealed his face from the multitude. When he paſſes, all the ſpectators are obliged to appear barefooted, and commonly to kneel—his ſubjects bow to the earth; but this compliance is not expected from foreigners. Even the meleks, when they approach the throne, creep on their hands and knees, which gave occaſion to an Egyptian to remark, that the *Jarea* (a female ſlave) in Fur was a melek, and the melek a *Jarea*—alluding to the ſervile behaviour of the miniſters, and the publicity of women in the domeſtic offices the palace.

The ſultan Abd-el-rachman, ſoon after he became poſſeſſed of ſovereign authority, with the oſtenſible motive of teſtifying his attachment to the religion of the prophet, but more perhaps with a view of obtaining greater weight among his ſubjects, by ſome mark of the conſideration of the firſt of Mohammedan princes, thought proper to ſend a preſent to Conſtantinople: it conſiſted of three of the choiceſt eunuchs, and three of the moſt beautiful female ſlaves that could be procured. The Othman emperor, when they were preſented, had, it is ſaid, never heard of the Sultan of Dar-Fur; but he returned a highly ornamented ſabre, a rich peliſſe, and a ring ſet with a ſingle diamond, of no inconſiderable value.

COMPARATIVE VIEW OF LIFE AND HAPPINESS IN THE EAST AND IN EUROPE.

THE great contraſt which is obſervable between the manners and perſonal character of the Orientals and Europeans, inſenſibly leads to a compariſon of its reſult in ſociety. The character of every nation merits the attention of the philoſopher; and the leſs that nation reſembles ourſelves, the more its diſtinguiſhing features require our inveſtigation.

While vanity inſtigates us to claim an undiſputed ſuperiority, experience often compels to doubt the validity of the ſentence on which we inſiſt. We are fearful of being reduced to acknowledge, that the labour, the thought, the agitation, which have place among us, often augment not the happineſs of the individual, and are of doubtful utility to the collective body. It is not however deſigned to inſiſt on any ſuch conceſſion; and only a few conſiderations ſhould be offered in the order they ariſe.

Impatience, activity, and ſanguine hope, are the habits of an European. By education his imagination is exalted and his ideas multiplied. By reading, and frequent intercourſe with foreigners, he is enabled to preſent to himſelf the ſtate of diſtant times and remote nations. Their knowledge, their arts, their pleaſures, become familiar to him; and, from a fixed principle of the human mind, the lively idea of all theſe advantages generates the hope of appropriating them. His firſt attempt is haply crowned with ſucceſs, and he is thus ſtimulated to farther effort; but as the bounds fixed to his attainments are removed the farther he advances, and improvement is infinite, his ultimate diſappointment is inevitable, and it is felt with a poignancy proportioned to the confidence of his firſt hopes.

The habits of the Oriental, on the contrary, are indolence, gravity, patience. His ideas are few in number; and his ſentiments

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in courſe equally rare. They are, however, generally correct, ſpringing from the objects around him, and for the moſt part limited to thoſe objects.

A chief cauſe of this contraſt muſt be the mode of education in each community. Education ſhould be the art of forming man on the principles of nature; by due attention to her unerring progreſs, no advantage of life can remain unimproved, and no duty can be miſunderſtood. But in no nation, with whoſe hiſtory we are acquainted, has ſuch a ſyſtem been eſtabliſhed. Almoſt every one forms its diſciples on the narrow views of that community, and nature is diſtorted and paraliſed by authority.

The leading fault of education in the various parts of the Turkiſh empire, originates in the prevailing ſuperſtition. Wherever this does not operate, the practice is ſufficiently rational.

The children of the Arabs early attain the character of manhood. A grave demeanour, fortitude in ſuffering, reſpect for age, filial affection, contempt for frivolous amuſements, frugality, temperance, hoſpitality, are taught in the eaſieſt and moſt effectual manner—by example; and, where there is leaſt probability of counter-inſtruction, in the houſe of the father.

They are early taken out of the hands of women, and ſent to ſtudy the Koran; an employment, which indeed has only the negative advantage of ſaving a portion of their time from poſitive idleneſs. As they advance towards maturity, little coercion is employed, but no incitement is adminiſtered to error. The father gradually accuſtoms himſelf to treat his ſon on the footing of an equal; who, on the other hand, ſeldom forgets the reſpect which is not imperiouſly exacted.

The dreſs of children is free from ligatures, their diet ſimple, and they are accuſtomed to variations of ſeaſon, and enured to fatigue. Theſe are a part of the advantages of Oriental education. Among its more ſerious inconveniences may be enumerated, an exceſſive credulity, the offspring of profound ignorance, and a keenneſs bordering on diſhoneſty, and falſehood. It is not eaſy to gain knowledge which is not ſought. The boy reſpects his father, and the ſummit of his ambition is to imitate his ſire. The parent is guided chiefly by the reflection, how far he may extend his purſuit of gain with impunity; of courſe a very refined morality is not to be expected from the ſon. Happineſs once confined to the ſmall circle of a family, little anxiety remains for the world at large. Hence the faintneſs of the conception of a community, and the duties ariſing from it.

In Europe, education is the art of moulding the ſoul to the times; and the preceptor is commonly ſucceſsful in conveying the inſtruction, of which experience has taught him the advantage, and which he is no ſtranger to the mode of applying. Advancement is the object; and to obtain it activity is required. This end is gained; but in the art of directing the powers of his mind to the attainment of his own happineſs, or to the public utility, or of preſerving his body ſane and vigorous, the man ſtill remains a child: and thus the true object of education is fruſtrated. We have on this head then, it would ſeem, no great reaſon to boaſt our ſuperiority.

The diſtinctive character of a nation is not to be ſought in great cities. The manners of theſe reciprocally approximate. In that part of Egypt where the character of women is unſophiſticated by mixture, however ſtrong their paſſions, they are not unchaſte. This perhaps proceeds

more from the influence of public opinion, than the ſanctions of municipal law.

Among the people, as they are to take part in domeſtic duties, their education is bounded by the uſeful. Among the opulent it extends to the ornamental, and many females in Kaira are taught to read and write. Inſtead of complaining of their ſeclusion as an injury, they may ſometimes be obſerved tenacious of it as a mark of reſpect. That ſeclusion, though originating in the real or ſuppoſed licentiouſneſs of the ſex, is, at this time, far from being the effect of individual jealouſy, but by long adoption, becomes a part of *bienſéance*. "I conſented to become your wife," ſaid a woman to her huſband, in my hearing, "that I might be veiled or private, *maſturé*, and remain tranquil in my family; not to be ſent to the market, to meet the eyes of *chalkillah*, all the world."

The ſeclusion of women has an important effect in ſociety; and the Orientals are accordingly, as has been often remarked, in a great degree ſtrangers to the paſſion of *love*. It is thought indecent in company to ſpeak much of women, and no man would venture to declare, that he had a preference for a particular woman, or intended to marry her.

Social intercourſe is thus rendered leſs vivacious and amuſing, but numberleſs inquietudes are avoided. They who affirm, however, that nothing is ſought from women, among the people of the eaſt, but ſenſual gratification, ſeem to err. Why ſhould a man, by having ſeveral women, neceſſarily become inſenſible to what is amiable or eſtimable in any individual among them? Or is the individual character rendered abſolutely indiſtinct by their being aſſociated together?

They are equally in error who aſſert, that women in the eaſt are ſlaves. Perhaps it might correctly be ſaid that they are treated as children; but, ſuppoſing this to be true, do not tenderneſs and affection operate towards children?

They hold not the ſame rank as in Europe; and, if they did, the intrigues carried on in the harem would render their huſbands and themſelves miſerable. In their preſent ſtate accidents of this kind are not without ill effects, but, in general, ſerve rather to miniſter a cauſe of diverſion, than to produce any very ſerious evil. Of courſe they give much leſs diſturbance than in Europe.

The ſpirit of chivalry, foſtered by the Cruſades, changed, in the heated imagination of the youthful hero, the lovely object of his deſires, into a deity that was to be adored. The viſible nature of the divinity fanned the flame of devotion. Whether the fair benignly ſmiled, or ſcornfully averted her countenance from the humble votary, her perfections were equally the ſubject of his eulogies, and her will of his propitiation. But all his ſervices were ſublimely diſintereſted, and were to remain without hope of remuneration, till giants ſhould be immolated to her perfections, and widows and orphans chaunt forth in her preſence the praiſes of their generous deliverer.

Theſe chaſte amours, in which all was elevated, and all exquiſitely unnatural, according to modern ideas, were yet the foundation of the rank women hold in modern Europe. This ſyſtem, forced and contrary to nature, could not long have place, and perhaps the ſex itſelf grew ſatiated with the frigid adulation of diſtant votaries, however flattering to its vanity. A more licentious gallantry then took place, and the charm was quickly diſſolved. The intercourſe between the ſexes being at length reduced to the ſimple gratification of the ſenſual deſire, ſociety was almoſt

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in the ſame ſtate in the weſt as in the eaſt, at the period when the ſeclusion of females firſt took place.

But the Europeans adopted a different plan. They either deſpiſed the ſecurity of bolts and bars as ineffectual, or too much of their former reſpect yet remained to allow the attempt. The ſex at length wearied, but not ſatiated with ſimple ſenſuality, was governed in the choice of its indulgences by caprice; and the men were ſtudiouſly employed to attract the eyes of their miſtreſſes, and to chain this fickle ſentiment, by varied foppery and grimace. Hence the romantic tales of our novels, hence the inconſequential conduct of their heroes, and hence the agitation of our ſocieties, at which the Orientals would ſmile.

It is not ſaid, that the miſeries and violent diſſentions which exiſt in families, reſult from the rank females hold in European ſociety. Eternal litigations, and all the confuſion of ſevere laws and looſe morals, are not attributed to that cauſe. It is only hinted that theſe evils are cöetaneous with that ſtate of ſociety, and that the pure inſtitution of matrimony may be enforced by the commanding voice of religion, and ſanctioned by municipal law, yet thoſe evils may remain without a remedy.

The young of each ſex are, in Europe, brought together, and taught to attach themſelves to each other: but interdicted from uniting, unleſs equal in rank, fortune, &c. Paſſion, however, is ſtrongeſt at an early age, when the reaſon which ſhould guide it is weakeſt. But the public inſtitutions eternize the puniſhment of a momentary folly. Parental authority, at other times, interferes, and, pretending only ſolicitude for the child's happineſs, renders both the parent and the offspring miſerable.

The huſband is vain of exhibiting in public his admired bride. From familiarities with a variety of men which, by being public, are authorized, ſhe is induced to try them in private. The man becomes unhappy and ridiculous, the wife diſgraced, and the lover impoveriſhed. Little or nothing of this is known in the eaſt.

Another ſtriking diſſimilitude between the Europeans and Orientals is obſervable in the number and quality of their reſpective laws, and the adminiſtration of public juſtice. Though a multitude of commentaries has been written on the ſimple maxims contained in the Koran, applying them to the particular caſes which occur in ſociety, the whole falls far ſhort, in point of extent, of the moſt ſimple ſyſtems of juriſprudence, with which we are acquainted. The ſingle circumſtance of each man being advocate in his own cauſe, contracts all judicial proceedings to a ſmall compaſs, and, whether juſtly or unjuſtly, all legal diſputes are ſpeedily terminated. So that no man can bequeath to his family the inheritance of judicial ruin.

It will no doubt be thought, that the corrupt character of judges, and the ſale of their decrees, are evils for which no advantages can compenſate; and here, at leaſt, it may be urged, that in Europe the adminiſtration of juſtice is more equal, and the right is not generally to be ſhaken with a bribe.

On the other hand, whatever may be the integrity of the judges in their deciſions, the length and delay of the proceedings is ſufficient to re-produce all the evils, which are thought to be obviated by the abſence of judicial corruption. If one of the parties be poor, and the other rich, the latter commonly has the option of ruining the former by throwing impediments in the way of a deciſion; and it is of little

importance to a man to know that he is ultimately victorious, when his property is already consumed, before the cause draw near its termination.

But independently of the immense expence of a process in most countries of Europe, the anxiety and suspence while it is depending, tend to lessen the happiness of society, and are, by their frequency, serious evils.

Domestic manners furnish a more minute but not unimportant contrast. In receiving strangers at his house, and when they leave it, the Oriental testifies no great emotion. The visitor is welcomed rather by actions than words. An Arab or Turk having once accorded protection, which he does with a kind of distance and hauteur, never afterwards withdraws it, and his word may be relied on. In visiting, as is well known, the common but absurd practice which obtains among ourselves, of urging those to stay longer, of whose company one is already tired, is obviated by the simple use of a little scented wood in a censer.

In their communications every thing tends rather to tranquillize the mind, than to excite the passions. The quarrels of the mere mob, indeed, evaporate in idle vociferation; but among persons of any breeding, the voice is scarcely ever raised above its ordinary tone.

The greatest number of menials in a family (and in the east they are very numerous) occasion no confusion. All is conducted in silence and order. All such directions as are in the common routine of affairs, are given by signs, and are instantly understood; not from pride, or as implying the vast distance between master and servant, but principally to avoid all *equivoque*, when persons of various descriptions are present, and, by making secrecy an uniform habit, to avoid all suspicion from the adoption of mystery in giving orders before company, when any thing is to be said which it is not intended that company should hear.

The ingenuity of man in contriving his own unhappiness, is in no part of the world more conspicuous than in Europe. Our mutual intercourse is so beset with forms, that it becomes doubtful whether it be a good or an evil; and the individual, not unfrequently, leaves a company dissatisfied that he ever entered into it. Hence a continued desire of changing place and forming new acquaintance.

Whenever a number of persons meet together, eating and drinking seem to be a necessary bond of union; and they often do not separate without that kind of festivity, which impairs the health of each, and creates dissentions, as it were, by its mechanical operations. The sole benefit which results from the social meals of the Arabs, is to us entirely unknown: no man thinks himself incapacitated from injuring his neighbour, in consequence of having divided with him a loaf of bread, and a little salt, at the convivial board.

In the east social intercourse is less artificial, and less hampered with rules. It is maintained with more complacency, and relinquished, not without hope of renewal. We too have now abandoned a part of its more inconvenient formalities; but some of its oppressive and despotic laws continue unaltered. The exterior may be changed; but the substance is identical.

In the east, they who are guilty of excess in drinking, bury their inebriation in the gloom of their closet. By this, present disturbance and future ill example are equally obviated, whatever may be the ill consequence to the wretched victim of intemperance. Of excess in eating there are few examples; for their longest meals, even when a series

feries of diſhes is preſented, as at the tables of a pacha or a bey, are terminated in a few minutes. The moderation and temperance of diet indeed throughout the eaſt, are matters of high praiſe; and whether virtues of climate, habit, or reflection, merit imitation among ourſelves. The reward is preſent uninterrupted health and tranquillity of mind.

If the multitude of wants conſtitute human inquietude, it muſt be remembered how much of what to us is indiſpenſible, is to them as if it had never been.

With them ſociety is rendered tranquil and eaſy by mutual forbearance; with us it is vexed with the neceſſity of mutual adulation. In the one region each man ſets a faſhion to himſelf; in the other all the conſtituent parts are wearied with ſerving an idol, that the collective body alone has ſet up. Each ſtands bareheaded from reſpect to the other, when both might remain covered without inconvenience to either.

Politeneſs is with the one an eaſy compliance, with which all are ſatisfied: with the other, it is a difficult effort, from the practice and the experience of which the parties mutually retire diſcontented.

The faſhions to which we are ſlaves, are indeed many of them ſo little founded in reaſon, that one is ſometimes diſpoſed to conſider them as imagined, by the indolent and reſtleſs, to occupy the thoughts and time of thoſe who have no better employment; or invented, like certain dogmas, to ſhew the merit of implicit credence. A certain dreſs is to be worn, a certain eſtabliſhment kept up, under pain of indelible ignominy; and the man, whoſe circumſtances diſable him from complying with this terrific mandate, with timid irreſolution hides his head.

See the European in converſation: even among his equals, he is not ſo ſolicitous to expreſs ſuch thoughts as riſe in his mind, as to find ſome employment for his tongue. It is not to give utterance to what naturally occurs, but that converſation may be *kept up*, that all are anxious. Garrulities and miſconceptions are civilly uttered for arguments; and the abortions of fancy and caprice hold the place of the ſame offſpring of judgment and reflection. Yet we laugh at them for uſing ſhort and few phraſes (*phraſes courtes et rares*, as Volney deſcribes them) when they have nothing to ſay!

It is with them, however, neither ridiculous nor irkſome to be ſilent. They go into company to be diverted, not to labour, and they eſteem effort in converſation a vain toil. The raillery and repartee of the occidentals is, among them, ſupplied (it muſt be allowed very inadequately) by the *Meddahs*, ſtory-tellers, and profeſſed jokers.

Human life, in the eaſt, is expoſed to a variety of caſualties. Peſtilence, famine, tyranny, all conſpire to diminiſh its ſecurity. It is natural to ſet a ſmaller value on any advantage, in proportion to the facility of privation. Hence the Orientals are not much diſturbed at the thoughts of death, but reſign life without a ſigh. The mind is tortured when the bloſſoms of hope are ſuddenly torn from it; but their gradual decay is not incompatible with a kind of tranquillity.

The European, more diſſatisfied with the preſent, and only ſupported by the hope of what is to come, attached beyond meaſure to the advantages which his anxieties have been prolonged to acquire, has already, even at an early age, fixed to himſelf a period, ſhort of which he thinks it *hard* and *unjuſt* to be deprived of life.

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Concerning paſt events, the fataliſt is conſoled by reflecting, that nothing he could have done would have altered the immutable order of things, and that his efforts before would have been as vain as his regret now is. This idea, indeed, is perhaps not deſtitute of ill effects, but it ſurely produces ſome good. If, by perſuading them that the evils which they ſuffer are unavoidable, it prevents them from endeavouring to avoid them; it alſo prevents their repining at what muſt, at all events, be endured as the immutable law of the univerſe.

The European, attributing more power to volition, aſcribes to his own want of judgment or energy the reſult of whatever terminates unfavourably. Thus a part of his life is occupied by ſelf-accuſation, which however enſures no amelioration for the future.

In the eaſt, if age be reſpected, it is reſpected, in part at leaſt, from the decorous behaviour of the aged. In Europe, if it be rendered ridiculous, it is ſo too often by a vain effort to perpetuate the manners and character of youth.

The commanding influence of a ſyſtem ſo flattering to the pride of its poſſeſſors, and operating ſo powerfully on their hopes and fears, as Mahommediſm, aided by the dread of preſent ſuffering, has ſo far counteracted the ſtrong impulſe of avarice, that *gaming* is in a great degree baniſhed from the eaſt. All the evils and inconveniences therefore of that practice, ſo ſeverely felt throughout Europe, are almoſt unknown in the Turkiſh empire.

If activity and a careful proviſion for the future, and that each ſhould contribute his efforts to the good of the whole, be neceſſary to conſtitute the happineſs of a people, how happens it that the Orientals, among whom theſe requiſites are wanting, ſhould yet be happy?

The ſyſtem of morals contained in the writings of the Orientals, is at once ſublime without being impracticable, and levelled to the uſe of mankind, without being looſe or low. Yet it is uſual with us to talk of their brutal ſtupidity! But this ſyſtem is not practiſed among them—and is the Chriſtian ſyſtem of morals practiſed among Chriſtian nations?

The Arabian and Perſian hiſtories and romances abound with traits of magnanimity, of generoſity, juſtice, and courage, no way inferior to, but in ſome inſtances exceeding, thoſe of other nations. The Greeks and ourſelves have indeed ſtigmatiſed them with the name of barbarians; but impartial enquiry proves that they are ſuſceptible of all that is admired in a poliſhed people; that crimes are treated among them as among other nations, and that, though their paſſions may be expreſſed in a different way, they have always the ſame ſource and the ſame object.

No man who reflects on his paſt enjoyments and ſufferings can doubt but that the latter, by their intenſeneſs, duration, and frequency, have been decidedly predominant.

To render them more equal, that is, to be leſs miſerable, or to make life tolerable, either the number of pleaſures muſt be augmented, according to the ſyſtem of the epicureans, or that of pains muſt be diminiſhed, according to that of the ſtoics. The Orientals ſtrive to attain the one object like ourſelves, by ſenſuality; and here it is not to be conceived that they are happier than we are; but the other they gain in a much more complete degree than ourſelves, and are much more exerciſed in the ſtoical ſyſtem, which ſeems the moſt effectual to the purpoſe.

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The paſſions, indeed, it is ſaid, are to the mind what motion is to the body; and the abſence of either cauſes, and marks in each reſpectively, ſymptoms that may be termed morbid.

A perfect abſence of paſſion is certainly preternatural, if it may not be called impoſſible; but, as our paſſions are more likely to be called into action by painful than by pleaſurable ſenſations, it ſeems little doubtful, that the mind on which they operate moſt feebly, will remain in the moſt tranquil ſtate. This tranquillity, this abſence of pain, (for joy, however poignant, is but a tranſient gleam, a coruſcation, which paſſing, renders the obſcurity which ſucceeds it more ſenſible) is the ſingle ſpecies of happineſs of which mankind is allowed to partake.

A man of great ſenſibility has his feelings hourly wounded by minute accidents, at which one of leſs lively ſenſations would ſmile.

Such a one is tranſported with love, and, if that love be ſucceſsful, his gratification is exquiſite. He is ſuddenly moved by compaſſion,—how refined his feeling in offering relief to diſtreſs! He ardently deſires fame—how he is elated with the ſlighteſt praiſes! But how often is his warm affection requited with neglect, or its gratification found impoſſible! How often will his compaſſion be excited, without the means of affording relief? And how much more is mankind diſpoſed to obloquy than to eulogy?

But this is not all; the ſame mind which is ſtrongly acted on by theſe paſſions, will alſo have its peace diſturbed by pride, ambition, anger, jealouſy, and reſentment. The ſubjects of all theſe tormenting paſſions crowd on it too cloſely to allow its complacency to be permanent. The ſunſhine of the morning will inevitably, ere night, be ſucceeded by a tempeſt. Some ſlight omiſſion of ceremonial will offend its pride, ſome ſordid repulſe will check its ambition; it will flame with anger at the breaking of a jar, or pine with jealouſy at the like frailty in a miſtreſs.

Something of the ſame kind has place with regard to taſte. A man of delicate taſte feels refined enjoyment from the contemplation of a beautiful landſcape or a fine picture, or the peruſal of an elegant poem: and is equally diſguſted at the ſight of any thing deformed, diſproportioned, or unnatural, in either. But, it may be ſaid, he has the option of contemplating a diſagreeable object, but not of feeling an unpleaſing ſenſation. And is it indeed ſo eaſy, in being perpetually converſant among mankind, to avoid obſerving their works? or does not the man who reads unavoidably fall on abſurdities which diſguſt him? Social man has been too long employed in counteracting nature, not to have moulded all to his dwarfiſh intellect; and the abortive efforts of imagination are numberleſs both in the arts and letters.

Then it will be ſaid, human happineſs is reduced to apathy; and the lively taſte and ardent paſſions, which have eſtabliſhed the ſuperiority of Europeans, only ſerve to diminiſh their ſum of felicity! This would be puſhing the argument too far; but each will draw his own concluſions.

The chief points of contraſt between the Europeans and the Orientals being thus marked, it will be ſeen how far it may be doubted on which ſide lies the greater degree of happineſs.

ACCOUNT

ACCOUNT OF THE SECT OF SAADI, OR SERPENT-EATERS.

[From SONNINI'S TRAVELS in UPPER and LOWER EGYPT.]

THE race of the Pſilli, a people who were perſuaded that they poſſeſſed the power of ſetting ſerpents at defiance, of charming them, of making theſe reptiles follow them at their call, and of curing their bites, has been perpetuated in Egypt. There exiſts a ſect called *Saadis*, from the name of their founder, a ſaint highly venerated among the Mahometans of that country. This Saadi had an uncle, a great man in Syria. Having one day ſent him for ſome branches of the buſhes in the deſert, when the lad had cut the fagot, he was very much at a loſs to tie it. After a fruitleſs ſearch, he bethought himſelf of knotting together ſeveral ſerpents, and with this living cord he bound his fagot. The uncle, delighted with his nephew's acuteneſs, ſaid to him: "Well, you may now make your way in the world, for you are more knowing than me." Immediately on this, the ingenious youth began travelling about the country, charming ſerpents by his wonderful and ſupernatural ſkill; and he had a great number of diſciples, to whom he communicated his art. His tomb is near Damaſcus; it is filled with ſerpents and other venomous animals, among which a perſon may lie down and ſleep, without their doing him the ſmalleſt injury.

Such is the ſuperſtitious origin of a very numerous ſect in Egypt, each individual of which inherits the ſkill of its founder. Every year they celebrate his feſtival in a manner analogous to the inſtitution. They march in proceſſion through the ſtreets, each holding in his hand a living ſerpent, which he bites, gnaws, and ſwallows piece-meal, making at the ſame time, frightful grimaces and contortions. But this feſtival, which I was deſirous of ſeeing, was celebrated only in the ſummer; and I was extremely anxious to examine cloſely one of theſe ſerpent-eaters. On this occaſion, M. Forneti and myſelf had recourſe to the ſame means that we had employed reſpecting the circumciſion (the mediation of a Turk;) and a Saadi came to my apartments, accompanied by a prieſt of his ſect. The latter carried in his boſom a large ſerpent, which he was continually handling. After having recited a prayer, he delivered it to the Saadi. I obſerved that the reptile's teeth had been drawn; however, it was very lively, and of a duſky green and copper colour.

The Saadi, with a muſcular hand, ſeized the ſerpent, which entwined itſelf round his naked arm. He began to be agitated; his countenance changed; his eyes rolled; he uttered terrible cries; bit the animal in the head, and tore off a piece, which we ſaw him chew and ſwallow. At that moment his agitation became convulſive; his howlings redoubled; his limbs writhed; his aſpect bore the marks of madneſs; and his mouth, diſtended by horrid grimaces, was covered with foam. From time to time he devoured freſh pieces of the reptile. Three men in vain exerted themſelves to hold him; he dragged them all three round the room, throwing his arms violently about on all ſides, and ſtriking every thing within his reach. To avoid him, M. Forneti and myſelf were ſometimes obliged to cling to the wall, to let him paſs and eſcape his blows. We could have wiſhed the maniac far enough off. At length the prieſt took the ſerpent from him; but his fury and his convulſions were not at firſt appeaſed; he bit his hands, and his paſſion continued. The prieſt claſped him in his arms,

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put his hand gently upon his back, lifted him from the ground, and recited ſome prayers. His agitation gradually ſubſided, and he became completely exhauſted, in which ſtate he continued a few moments.

The Turks, who were preſent at the abſurd and diſguſting ceremony, were fully convinced of the reality of this religious frenzy. It is certainly true that, whether reality or impoſture, it was impoſſible to expreſs the tranſports of fury and madneſs in a more ſtriking manner, or to ſee a man in a more terrific ſituation.

The great number of theſe ſerpent-eaters had induced ſome authors, and particularly Dr. Shaw, to believe that they ſubſiſted entirely upon theſe reptiles. According to this Engliſh traveller, there are at Cairo and in its environs, more than four thouſand perſons who live on nothing but ſerpents. This, however, is a miſtake; ſerpents are not a diſh among the Saadis; and, if in their ceremonies they gnaw a few raw and alive, they are far from making them an article of food.

In Egypt theſe men are very much reſpected; but among the Turks of the other parts of the Ottoman empire they are only objects of laughter.

I had an opportunity of converſing with a ſheick, or prieſt of this ſect. He was of an open diſpoſition; for, though he aſſured me that ſeveral of his fraternity had an extraordinary power over ſerpents, he confeſſed that he had not the ſmalleſt claim to it; but, on the contrary, was exceedingly afraid of theſe animals. By him I was informed of ſome particulars which I ſhall relate. In order to have ſerpents ready, upon every occaſion, they keep them in their houſes; but they previouſly take the precaution of extracting their teeth. If any perſon be bitten by a ſerpent, he runs directly to a Saadi, who mutters a few words over the wound, ſcarifies it with a razor; and, after having filled his mouth with lemon-juice, ſucks the blood from it repeatedly. Theſe men alſo cure the *ſerpent's breath*, an appellation given by them to inflammatory puſtules which ſometimes break out on thoſe who ſleep in the open air, with any part of the body uncovered, and which they pretend are cauſed by the poiſonous breath of a ſerpent. The remedy they employ is oil of ſeſamum mixed with ceruſe, or white lead. With this liniment they rub the puſtules, never failing, at the ſame time, to mutter a few words, without which every remedy would be perfectly ineffectual. Such is the lot of mankind, that there is no nation in the univerſe, of whoſe hiſtory many pages are not appropriated to ſuperſtition!

CHARACTER OF THE LATE POPE, PIUS VI.

PIUS VI. was neither wicked nor weak; but he had ſeveral glaring defects, which could not eſcape the leaſt diſcerning eye; and caprices which formed a ſtriking contraſt with the majeſtic gravity of the part he had to play. Nobody denied him ſeveral brilliant qualities, conſiderable capacity, an agreeable turn of mind, manners at once noble and prepoſſeſſing, an eaſy and florid ſtyle of elocution, as much information as could be expected in a prieſt imbued with the principles of his profeſſion, and a taſte for the arts tolerably correct. Impatient, irraſcible, obſtinate, and ſuſceptible of prejudices, he was, however, neither obſtinately rancorous, nor premeditately malevolent. Few inſtances can be quoted of his ſenſibility; many may be adduced of his good-nature. In leſs difficult circumſtances, and with means proportioned to his views, he would, perhaps, have paſſed for a prudent

fovereign. But his ruling paſſion was an exceſſive love of fame, which was the principal ſource of his faults and his misfortunes. It was that love of fame, which, when not joined to a ſtrong mind, often degenerates into puerile vanity. He would have wiſhed to ſignalize his pontificate in every manner; and to aſſociate his name with the moſt ſplendid enterprizes. His vanity, which was apparent in every thing, drew upon him frequent mortifications. Deſcended from a family ſcarcely noble, he plumed himſelf, from the very beginning of his reign, upon his illuſtrious race. To the modeſt coat of arms of his anceſtors, he added all the vain embelliſhments of blazonry; and compoſed an eſcutcheon which afforded ample room for ridicule. It is well known that the Italian people are more apt, perhaps, than any other, to lay hold of any thing ridiculous with mercileſs avidity. To two wings, of which the arms of his family conſiſted, he added an eagle *fleurs de lys*, and ſtars. Theſe pompous armorial bearings were cruelly criticiſed in the following diſtich:

Redde aquilam imperio, Francorum lilia regi,
Sidera redde polo; cætera, Braſchi, tua.

"Reſtore your eagle to the Empire; his lilies to the King of France; and the ſtars to heaven: the reſt, Braſchi, is your own."

His arms and his name were repeated a thouſand times over in Rome and in the reſt of the eccleſiaſtical ſtate. They are to be ſeen, not only upon the monuments which he erected, and upon ſuch as he repaired, but even upon thoſe in which he made the ſmalleſt change; and, unleſs Rome be utterly deſtroyed, the name of Pius Sextus, thanks to his provident vanity, will deſcend to the lateſt poſterity. While changing the Roman government, the French commiſſaries expunged it from all the profane monuments; but it ſtill exiſts upon all the ſacred edifices in which Pius VI. had the moſt remote concern. It was calculated, in 1786, that this rage for availing himſelf of the ſlighteſt pretence for immortalizing his name had already coſt the treaſury two hundred thouſand crowns. It was this incurable vanity, rather than his piety or taſte for the arts, which ſuggeſted to him the idea of conſtructing a ſacriſty by the ſide of St. Peter's church. He there diſplayed a magnificence which may dazzle at firſt ſight; but which cannot conceal its numerous defects from the eye of the connoiſſeur. Good taſte may indeed apply to him the famous ſentence pronounced by Apelles upon the Venus of a painter of his time: "You have made her fine, becauſe you could not make her beautiful." In like manner the ſacriſty of St. Peter's, which coſt more than ſixteen hundred thouſand Roman crowns, is overloaded with all the moſt gaudy decorations which architecture, ſculpture, gilding, and painting, can afford; but it only appears ſo much the meaner when compared with the ſuperb edifice, by the ſide of which it ſtands. It is the deſign of Carlo Marchinonni, an architect of inferior talents, and recalls to mind the defective ſchool of Boromini; the ſtyle being altogether low and ignoble. Its dimenſions are contrary to the rules of art; and it is full of nothing but breaks, niches, and projections. The columns and the altars are, in a manner, concealed in obſcure corners; and the whole is ſurchaged with ornaments of the moſt taſteleſs kind.

In order to erect this monument to his glory, much rather than to that of the God whoſe vicar he called himſelf, it was neceſſary to pull down the temple of Venus, for which Michael Angelo had ſo much veneration, that he would have conſidered the mere idea of touching it as ſacrilege.

It

It may be eaſily conceived that Pius VI. was not ſparing of inſcriptions in the ſacriſty of St. Peter's. Over the prineipal entrance were inſcribed theſe words: Quod at templi Vaticani ornamentum publica vota flagitabant, Pius VI. pontifex maximus, fecit perfecitque anno, &c. "What the *public voice* demanded for the decoration of the church of the Vatican, Pius VI. ſovereign pontiff, began and completed in the year, &c."

How great muſt have been his mortification, when under this inſcription he found the following inſolent lines:

Publica! mentiris. Non publica vota futurc,
Sed tumidi ingenii vota fuere tui.

"Thou lieſt! the public voice was not conſulted; thou followedſt the dictates of thy vanity alone."

That motive actuated him in all his enterpriſes: before his elevation to the pontificate, he had poſſeſſed the abbey of Subiaco, at the diſtance of twenty miles from Rome. There alſo he diſplayed, in the moſt expenſive manner, his taſte for magnificence. An abbey in which he had reſided, a church in which he had celebrated the holy myſteries, could not be ſuffered to remain in obſcurity. He ſpent conſiderable ſums in embelliſhing Subiaco; and this is not one of the ſmalleſt reproaches that may be brought againſt his prodigality.

A protector of the arts, more out of oſtentation than taſte, he connected his name with the famous muſeum, which conſtituted one of the moſt beautiful and moſt uſeful ornaments of the Vatican; and the kind of glory, thence reſulting to his pontificate, is not altogether uſurped. That glory had tempted him when he was as yet only treaſurer of the Apoſtolical Chamber. The famous ſtatue of Apollo Belvedere was, in a manner, exiled, with ſeveral others, in one of the court-yards of the Vatican. Braſchi ſuggeſted to Clement XIV. the idea of forming on that ſpot a collection of ancient monuments; and, as treaſurer, preſided over the firſt rudiments of this eſtabliſhment. When ſeated upon the pontifical throne, he added body and conſiſtence to his brilliant project. He built round the court-yard of the Apollo vaſt apartments, which he ornamented with ſtatues, buſts, terms, and bas-reliefs; and gave to the rich collection a title which aſſociated his name with that of his predeceſſor. He called it the *Muſeum Pio-Clementinum*. That muſeum gradually became one of the moſt valuable in Europe; Pius VI. neglecting nothing to enrich it. He claimed the right of pre-emption whenever any antique was diſcovered; and, by thus eluding the greedy interference of the antiquaries, procuring monuments of art at the firſt hand, and at a moderate price. There it was that his vanity provided abundantly for its own gratification. Beneath each piece of ſculpture which he had acquired, theſe words were engraved in letters of gold: *Munificentia Pii VI. P. M.* Moſt of theſe monuments of art ſtood in a bad light, and could not be ſeen to advantage without the aſſiſtance of a torch, the wavering gleams of which added to their beauty, by giving them life (if it may be ſo ſaid;) the only thing in which ſome of them were defective. It was thus that connoiſſeurs went to admire the Ganymede, the Apollo Muſagetes, the Torſo, the Laocoon, and, above all, the famous Apollo Belvedere, which is alone worth a whole muſeum.

Engravings and explanations of the principal works of art thus collected, began to be publiſhed in 1783, under the auſpices of Pius VI.

who was much flattered by the compliment. Lewis Myris undertook the task; and the learned Visconti, who in the first moment of the revolution, was elevated to the consulate of Rome, added to the plates a luminous commentary, which at once proves his taste, his sagacity, and his erudition. They were both, it must be confessed, powerfully seconded by the pope. The first six volumes of this work, in folio, had already appeared in 1792; and the seventh was ready when the political commotions in Italy began. All lovers of antiquity must regret the suspension of this undertaking; which does double honour to the pontificate of Pius VI.

Wherever there was any thing more splendid than useful to be done, the zeal of that pontiff, and particularly his name, were sure to appear. Wishing to embellish the entrance of the Quirinal palace, where he resided during the summer season, he raised, at great expence, in 1783, the obelisk which was lying upon the ground near the Scala Santa, and placed it between those two equestrian statues, that have given to the eminence on which the palace stands the name of Monte Cavallo.

Though the erection of this obelisk was in itself a thing little meritorious, adulation made it serve as a pretence for lavishing upon the holy father, in pompous inscriptions, the most rediculously bombastic praise. But the Roman people, who were suffering a privation of the most necessary articles of life, while the treasury was exhausting itself in embellishing their city, did not partake of the enthusiasm felt by the authors of those inscriptions. A wag, who preferred food to obelisks, gave on this occasion a lesson to his holiness, by applying to him a well known passage of the gospel. He wrote these words at the bottom of the obelisk: *Signore, di a questa pietra che divenga pane*; "Lord, command that these stones be made bread."

Pius VI. took pattern from him whose vicar he was, and abstained from the miracle.

This rage for putting his name every where, and for suffering his munificence to be celebrated upon the most trifling occasions, exposed him to more than one sarcasm of a similar kind. It is well known that there was no other bread made at Rome but little round loaves, weighing a few ounces, which were called *pagnotte*, and which cost two *baiocchi*, or about two French sous apiece. The price never varied; but, according as corn was more or less dear, the size of the *pagnotta* was diminished or increased. At a moment of scarcity, when the administrators of provisions had been obliged to make an extraordinary reduction in the weight of the *pagnotta*, one of those innocent malcontents, who exhale all their gall in raillery, thought proper to put an exceedingly small *pagnotta* into the hand of Pasquin, and to write under the statue those pompous words, so often repeated in Rome, *Munificentia Pii Sexti*.

Bells had a double title to his predilection. They were connected with that worship, by the pomp of which he was so much flattered; and, the greater their size, the farther off did they announce the holy personage by whose orders they were set in motion. Malignity reproached him, in this particular, with more than one grave puerility. There was in St. Peter's church at Rome, a bell which only weighed 21,244lb. He ordered it to be recast in the year 1783, with the addition of 400 Quintals of metal. Three years afterwards he had another cast of 280 quintals, and christened it with great solemnity. Barbarous verses were afterwards engraved upon it, which attracted the admiration of the devout, and offended men of taste. It was loaded with valuable pearls, and

and decorated with eight dolphins, a crown, and a thouſand other ornaments; but the founder's art had failed him; the bell had no ſound. The wags made themſelves merry at the expence of the bell, the founder, and the godfather. They voted that this abortion ſhould be depoſited either in the *Muſeum Pio Clementinum*, or in the arſenal, after the example of the Abderitan ſages, who were of an opinion ſomewhat ſimilar in regard to a well, which was very ſkilfully conſtructed, and which wanted nothing but water.

But it was in the performance of his pontifical functions, above all, that his taſte for oſtentation was diſplayed, and that his vanity found frequent opportunities. It muſt be confeſſed, that on thoſe occaſions he was as much favoured by nature as by the pompous ceremonies of the Roman Catholic church. He was in all reſpects one of the handſomeſt men of his time. To a very lofty ſtature he joined a noble and expreſſive ſet of features, and a florid complexion, which the hand of time itſelf ſeemed to ſpare. He contrived to wear his pontifical habits in ſuch a way, that they deprived him of none of his perſonal advantages. In every thing he did he diſplayed them with a refinement of coquetry which gave great ſcope to ridicule. When elevated to the papacy, he had, in conformity with a cuſtom that had grown into a law, laid aſide the peruke which he wore while cardinal. His forehead was entirely bald, but there remained behind, and on each ſide of his head, a ring of hair of the moſt brilliant white, which gave him a look at once noble and venerable. He had alſo one of the handſomeſt legs in Italy; and was not a little vain of it. Not wiſhing that his long pontifical robes ſhould entirely conceal that part of his perſon to the adorning of which he was always ſcrupulouſly attentive, he took great care to hold them up on one ſide, ſo that one of his legs was entirely expoſed to view. This affected diſplay of his hair and legs, ſo unworthy of a grave pontiff, gave occaſion to the following diſtich, which, though bad enough in itſelf, ſerves, however, as a proof that no opportunity was loſt of turning him into ridicule: *Aſpice, Roma, Pium. Pius! haud eſt: aſpice mimum—luxuriante comâ, luxuriante pede.* "Rome, look at Pius. He Pius! no indeed: he is a comedian. Behold the diſplay of his hair; and ſee how vain he is of his leg."

Nothing, indeed, was more ſtriking than to ſee him, on days of great parade, crowned with the triple diadem, arrayed in robes of the moſt dazzling white, which contraſted with the ſplendour of the Roman purple, ſoaring in a manner over a crowd of eccleſiaſtics of every rank, and ſeeming thereby to announce his ſway over the univerſal church. On theſe ſolemn occaſions all the members of the clergy came and adored him repeatedly, and each claſs in a different way. The cardinals were not permitted to kiſs his hand till they had bowed down before his throne. The prelates and heads of orders bowed ſtill more humbly, and only roſe as high as his knees, while the inferior clergy remained at his feet. The allegory of the ſtatuary, proſtrate before the work of his own hands, was never better applied, than to this ſtupid veneration, particularly of the cardinals for the ſovereign pontiff—the creature of their intrigues and of their caprices; in which not one of them, perhaps, ſeriouſly thought that he ſaw the work of the Holy Ghoſt.

It is needleſs to ſay with what an eye of pity philoſophy looks down upon this humiliating homage, paid by a multitude of reaſonable beings to one of their fellow creatures. Many ſpectators, however, many even of thoſe who were the moſt ſtrongly guarded againſt all theſe vain illuſions,

illuſions, could not help feeling a ſtrong emotion at the ſight of the pomp that ſurrounded St. Peter's chair, eſpecially while it was occupied by Pius VI. The greateſt magnificence accompanied him whenever he went out. A carriage, at the back of which he was ſeated alone in an arm chair richly ornamented, moved forward, eſcorted by ſervants on horſeback, and in long clothes, driven by a coachman and poſtilions with their heads uncovered, rolling along majeſtically ſlow between two rows of foot ſoldiers, and followed by detachments of light horſe and cuiraſſiers. It was impoſſible for any thing to be more ſtriking.

The jubilee of 1775, in all probability the laſt, was celebrated with a degree of magnificence, ſurpaſſing that of all the preceding ones. It was on this occaſion that Pius VI. gave the firſt proof of his taſte for pompous ceremonies. One of the principal circumſtances of the feſtival, that indeed which may be called the firſt act of it, is the opening of the famous *porta ſanta*, or ſacred door. This door, which is one of thoſe of St. Peter's church, remained conſtantly ſhut, except during the holy year. It was then opened with a parade, of which Pius VI. took care not to diminiſh the effect. It was his office to preſide over the demolition of a brick wall, that cloſed the entrance of the ſacred door. Advancing with majeſtic gravity, he ſtruck the firſt ſtroke, and inſtantly the wall fell to the ground under the redoubled blows of the workmen, to whom the ſignal had been given. The pious ſpectators eagerly ſeized upon the materials; each ſtone being an object of high veneration. By their contact with that which was laid four-and-twenty years before by the ſacred hands of the ſovereign pontiff, they had acquired the virtue of curing all ſorts of diſeaſes. According to cuſtom, the *porta ſanta* remained open during all the holy year, and was the ſcene of the moſt ridiculous mummery. The pope himſelf did not paſs through it without exhibiting marks of the moſt profound reſpect; while the pilgrims, diſdaining the numerous paſſages which led into the church of St. Peter, entered it only by crawling under the ſacred door upon their hands and knees. It was ſhut with great ſolemnity at the end of the year. The pope approached, ſitting upon a kind of throne, and ſurrounded by the cardinals; and an anthem was ſung, accompanied by loud muſic: it was the lyre of Amphion about to rebuild the walls of Thebes. The pontiff then deſcended with a gold trowel in his hand; laid the firſt ſtone of the wall, which was to laſt twenty-five years, put a little mortar upon it, and reaſcended his throne. Real maſons took his place, and completed the blocking up of the ſacred door, the ceremony cloſing with a ſolemn maſs. Thus did the Roman Catholics laviſh the auguſt myſteries of their religion, ſometimes upon the baptiſm of a bell, and ſometimes upon the rebuilding of a wall. The following day the feſtival was continued, Pius VI. diſplaying in it all his great talents for acting, which were hitherto but little known. He was already near ſixty years of age; but his complexion ſtill retained ſomewhat of the brilliant colouring of youth. The Romans, accuſtomed to ſee their pontiffs bending under the weight of years, and labouring in the performance of their public functions, which were often long and fatiguing, admired the addreſs and grace with which the new pope acquitted himſelf of his taſk. The church ſeemed to grow young again, and to have a right, as well as Pius VI. to expect proſperous days.

It was ſhortly afterwards that the beauty of his perſon received an homage, to which the vicars of Jeſus Chriſt were not accuſtomed. While Pius VI. was paſſing through a ſtreet of Rome, carried along with a ſplendour ſuitable to his dignity, a voice was heard from one of the windows,

dows, which were crouded with curious ſpectators. It was that of a young woman: *Quanto è bello! quanto è bello!* cried ſhe in a moment of enthuſiaſm. An old woman, in haſte to correct any thing that might appear too profane in this exclamation, replied, with her hands joined, and her eyes lifted up towards heaven, *Tanto è bello quanto è ſanto!* It is ſaid, that ſuch a compliment gave Pius VI. more ſecret ſatisfaction than all the incenſe laviſhed upon him by the prelates at the altar, and all the genuflexions of the ſacred college.

As pope, he could not lead a more exemplary life; but as a man, and as a ſovereign, he, no doubt, expoſed himſelf to many and ſerious reproaches. An erroneous opinion had been formed of him in many reſpects. When rendered more conſpicuous by his eminent ſtation, he ſoon diſcovered a great ignorance of worldly affairs, particularly of politics; an obſtinacy which never yielded to a direct attack; and an invincible attachment to certain prejudices, inſeparable perhaps from his profeſſion, but of which he neither ſuſpected the inconvenience nor the danger. He entertained the moſt favourable idea of his own capacity. Rather headſtrong than firm, he was conſtantly undoing what he had done; and this mixture of vanity and weakneſs was attended with two ſerious inconveniences. What was no more than inconſiſtency, and want of reſolution, was taken for duplicity. Coldly affable, he never felt a real affection for any one; nor ever knew what it was completely to unboſom himſelf, unleſs when fear rendered him communicative.

Out of the five cardinals, who were ſucceſſively his ſecretaries of ſtate, there was not one who could flatter himſelf with having enjoyed his entire confidence. He granted it, but ſtill under certain reſtrictions, to Gerdyl and Antonelli, two other cardinals; conſulting them ſolely about matters in which he thought he could derive advantage from their talents.

Haſty, impetuous, and ſometimes even paſſionate, he required to be curbed by fear, or ſoothed with affectionate language, which indicated an attachment to his intereſt, without hurting his pride. Cardinal de Bernis ſaid of him, towards the end of the year 1777, "I watch over him inceſſantly, as over a child of an excellent diſpoſition; but too full of ſpirits, and capable of throwing itſelf out of the window if left a moment alone."

That excellent diſpoſition was afterwards in great meaſure ſpoiled by adulation, the poſſeſſion of power, and the want of ſomebody bold enough to tell him the truth, or inclined to take the trouble. Faults gradually manifeſted themſelves that the moſt clear-ſighted had not even ſuſpected. His long pontificate was, beſides, a grievance which neither the cardinals nor the people of Rome could pardon him. In ſhort, a concurrence of unlucky circumſtances, to which he knew not how to accommodate himſelf, added to his improvidence and to his vanity, the principal ſource of his prodigality, and of his taſte for brilliant but expenſive enterpriſes, rendered him in the end more odious than many princes who have been really wicked. One of his operations alone will find favour with poſterity, and even immortalize his name, although infected with that principal fault which manifeſted itſelf in every thing, and which was not one of the ſmalleſt cauſes of his ſorrows: this is the draining, which he at leaſt began, of the pontine marſhes.

It remains for us to ſpeak of the chief of that family, which, by a ſeries of imprudent acts, ſuddenly fell from the pinnacle of greatneſs to the depth of the moſt deplorable humiliation. Pius, who by his own obſtinacy

obſtinacy and the evil counſels to which he had given ear, had prepared the way for the overthrow of the Roman government, remained almoſt entirely ignorant of the cataſtrophe which completed that event. He was yet overwhelmed with the conſternation cauſed by the entry of the avengers of Duphot, when he learned that the cardinals had abdicated their temporal authority: he ſaw general Cervoni enter, who at this time held the chief command in Rome: he came to announce to the pontiff that the people had thought proper to reſume their ſovereignty. "And my dignity!" exclaimed his holineſs in the accent of profound grief.—"It is too intimately connected with religion, which the people are determined to preſerve inviolate. They have ſo expreſſed their reſolution in the ſolemn act which has been proclaimed in their name; and they promiſe to make for you a proviſion ſuitable to your rank."—"And my perſon?" continued Pius.—"It is in perfect ſafety; and they engage to furniſh a guard of a hundred and twenty men for its protection."—Pius was ſilent, and reſumed an air of reſignation.

But the hopes which this beginning had encouraged him to conceive were ſoon diſappointed. Notwithſtanding the wiſh ſo formally and ſolemnly announced by the people of Rome in favour of liberty, that capital harboured a conſiderable number of malcontents—of ſincere fanatics, who conſidered the fall of the papal throne in no other light than as the downfall of religion—many hypocrites, who from motives of vanity and ambition were intereſted in ſupporting the ancient order of things. Under theſe circumſtances the preſence of the pope might give birth to conſpiracies. Though he had, while veſted with ſovereignty, been viewed with the eyes of hatred, or at leaſt of indifference, his misfortunes had now rendered him an object of ſympathetic intereſt. The French commiſſioners thought it indiſpenſable to the public ſafety that he ſhould be removed from Rome, and even from the Eccleſiaſtical State. He was conducted to Tuſcany, not at the requeſt of the Grand Duke, but with his conſent, which that prince would have been very glad to have the liberty of refuſing. He was ſenſible that the preſence of ſuch a gueſt might become troubleſome, and even dangerous. Pius was at firſt conducted to Sienna.

Here he lived in peace, and forgotten by almoſt every one except the devotees and ſome curious perſons, when an earthquake ſhook the place which he had choſen for his retreat, and threw down ſeveral buildings. Pius lodged in the convent of St. Barbara; but, at the moment when the ſhock was felt, he happened to be walking in one of the public gardens of the city. He was haſtily conveyed from within the walls of Sienna to a country houſe called by the name of *Hell*; which circumſtance gave riſe to the ſarcaſms of the undevout who had not felt compaſſion for his misfortune. After ſome time he was conducted to Florence. At the moment of his entering this city, the ſky, which is uſually ſo ſerene in Tuſcany, was overcaſt with heavy clouds, and the rain fell in torrents. Malignity, which is ſo prompt, eſpecially in Italy, to ſeize every opportunity of exerciſing itſelf, did not fail to obſerve that the pope brought bad weather with him wherever he came.

His firſt interview with the Grand Duke, which took place in preſence of the Marquis Manfredini, was on both ſides accompanied by marks of melting tenderneſs. The Grand Duke in particular was moved even to the ſhedding of tears: but he was not inſenſible of the inconvenience which might reſult to him from keeping the pope in his capital. In a few days after his arrival, Pius was conducted to a Carthuſian monaſtery, at the diſtance of two miles from Florence. The

The fallen pontiff did not appear so deeply affected by his situation as might have been supposed: his health, far from being impaired by a catastrophe which would have caused any other person in like circumstances to die with grief, seemed to be in a more flourishing state. His relish for the pleasures of the table accompanied him to his solitude: and, on that subject, the following anecdote is related by credible witnesses:—On his arrival at the Carthusian convent, his holiness, who, among the small suite of servants by whom he was accompanied, had not forgotten his cook, gave him permission to take his station in the conventual kitchen, and there ordered him to prepare for his table delicate viands, which formed a striking contrast with the frugal fare of the monks. The latter, mortified no doubt by the comparison, pretended to be scandalized at the holy father's sensuality, and pronounced it to be the source of those calamities which desolated the church. The cook warmly defended the cause of his useful profession, and, in revenge for the ill humour shown by those recluses, slipped, unknown to them, a bit of meat into their pease-soup. This horrible plot being discovered, the monks utter shrieks of indignation, which reach the ears of his holiness. Pius fancies he still hears the revolutionary storm growl around him; he inquires what cause has excited it: to avoid the repetition of such a scene, he orders that his kitchen be henceforward separate from that of the monks; and they congratulate themselves on no longer having before their eyes the scandalous exhibition of the sovereign pontiff's epicurism.

Vanity, as another anecdote proves—and that particular species of it which was the least excusable in a pontiff and an old man—the vanity which is connected with external accomplishments, did not abandon Pius in his retreat. There lived at Florence a young Hungarian painter, who was desirous of the honour of drawing his holiness's portrait, with the intention, as he said, of presenting it to the empress. He was conducted to the holy father, who accepted his offer with a sort of enthusiasm: "Let your pencil," said he to the young artist, "revive that bloom and animated complexion which is somewhat faded through age and chagrin: paint me in scarlet robes, to give the greater relief to my features." The painter is said to have paid docile obedience to the directions of the pontiff's vanity; and Pius, even in the season of disgrace, still found a flatterer. It is asserted that his eyes dwelt with pleasure on that portrait, which some years before would have been a very good likeness, and which, by an innocent deception, carried him back to a less advanced age, and to happier days.

ON THE ART OF SCOURING DIFFERENT KINDS OF STUFFS.

THIS art supposes, 1st, A knowledge of the different substances capable of staining any kind of cloth; 2d, of the substances to which recourse must be had in order to make those deposited on the stuff to disappear; 3d, a knowledge of the effects produced on colours by those re-agents which it may be necessary to employ to destroy stains; 4th, a knowledge of the manner in which the cloth is affected by those re-agents; 5th, of the art of restoring a colour changed or faded.—Of those bodies which occasion spots on different kinds of cloth, some are easily distinguished by their appearance, such as greasy substances; but others have more complex effects, such as acids, alkalis, perspired matter, fruits, urine, &c. Acids redden black, fawn, violet,

violet, and puce-colour, and every ſhade communicated with orchiſſa-weed, iron, aſtringents, and every blue except indigo and Pruſſian blue. They render the yellows paler, except that of arnatto, which they change into orange.

Alkalies change to violet the reds produced by Brazil wood, log-wood, and cochineal. They render the greens on woollen cloth yellowiſh, make yellow brownish, and change the yellow produced by arnatto to aurora. Perſpired matter produces the ſame effects as alkalies.

When the ſpots are produced by ſimple bodies on ſtuffs, it is eaſy to remove them by the means already known. Greaſy ſubſtances are removed by alkalies, ſoaps, the yolk of eggs, fat earths; oxyds of iron, by the nitric and oxalic acids; acids by alkalies, and reciprocally. Stains of fruit on white ſtuffs may be removed by the ſulphurous acid, and ſtill better by the oxygenated muriatic acid. But when the ſpots are of a complex kind, it will be neceſſary to employ ſeveral means in ſucceſſion. Thus: to deſtroy the ſtain of coom from carriage-wheels, after the greaſe has been diſſolved the oxyd of iron may be removed by the oxalic acid.

As colours are often changed by re-agents, it will be neceſſary, in order to reſtore them, that the ſcowerer ſhould poſſeſs a thorough knowledge of the art of dying, and how to modify the means according to circumſtances. This becomes the more difficult when it is neceſſary to re-produce a colour ſimilar to that of the reſt of the ſtuff, to apply that colour only in one place, and often to reſtore the mordant by which it was fixed, and which has been deſtroyed, or even the firſt tint which gave the colour its intenſity. It may be readily conceived, that the means to be employed muſt depend on the nature of the colour and the ingredients by which it was produced; for it is known that the ſame colour may be obtained from very different bodies. Thus, after an alkali has been employed to deſtroy an acid ſpot on browns, violets, blues, poppies, &c. the yellow ſpot which remains may be made to diſappear by a ſolution of tin; a ſolution of ſulphat of iron reſtores the colour to brown ſtuffs which have been galled; acids reſtore to their former ſplendor yellows which have been rendered duſky or brown by alkalies; blacks produced by logwood become red by acids; alkalies change their red ſpots to yellow, and a little of the aſtringent principle makes them again become black. A ſolution of one part of indigo in four parts of ſulphuric acid, diluted with a ſufficient quantity of water, may be employed with ſucceſs to revive the blue colour of cotton or wool which has been changed. Scarlet may be revived by means of cochineal and a ſolution of the muriat of tin, &c.

The choice of re-agents is not a matter of indifference. Vegetable acids are preferable; the ſulphurous acid, however, may be employed for ſtains occaſioned by fruit: it does not change the blue of ſilk, nor colours produced by aſtringents: it does not degrade the yellow of cotton. Ammonia ſucceeds better than fixed alkalies in removing ſpots produced by acids. It is employed in vapour; its action is ſpeedy, and ſeldom alters the colour.

The means of removing greaſy ſpots are well known. This effect is produced by alkalies, Fuller's earth, volatile oils diſſolved in alcohol, a heat proper for volatilizing greaſe, &c. Spots occaſioned by ink, ruſt, or iron-mould of any kind, and all thoſe produced by the yellow oxyd of iron, are removed by the oxalic acid: the colour may be re-

ſtored

ſtored by alkalies, or a ſolution of the muriat of tin. Theſe ſpots may be removed alſo by the oxygenated muriatic acid, when they are on white ſtuffs or paper.

The action of alkalies, and that of perſpired matter, are the ſame: their ſpots may be effaced by acids, or even by a weak ſolution of the muriat of tin. When theſe ſpots ariſe from ſeveral unknown cauſes, in order to deſtroy them recourſe muſt be had to *polychreſt* compoſitions. The following may be conſidered as one of the moſt efficacious. Diſſolve white ſoap in alcohol, and mix this ſolution with the yolks of from four to ſix eggs: add gradually eſſence of turpentine; and incorporate with the whole ſome Fuller's earth, in ſuch a manner as to form balls of a ſuitable conſiſtence. Moiſten the ſpot; and, having rubbed it with theſe balls, the ſpot will be removed by waſhing the ſtuff. All ſpots, except iron-mould and ink, may be removed in this manner.

Waſhing deſtroys the luſtre, and leaves a tarniſhed place diſagreeable to the eye; but the luſtre may be reſtored by drawing over the waſhed place, and in the direction of the pile, a bruſh moiſtened in water impregnated with a little gum. You may then apply a ſheet of paper, or a piece of cloth, and a conſiderable weight, under which the cloth muſt be left dry.

NEW THEORY OF RESPIRATION.

PROFESSOR HERHOLDT read lately, before the Academy of Sciences at Copenhagen, a memoir reſpecting ſome experiments made by him and M. Rafn on living animals, in order to diſcover the mechaniſm of reſpiration; having in view, at the ſame time, the cure of wounds in the breaſt. The profeſſor ſhewed that the beſt authors on ſurgery have hitherto explained the mechaniſm of reſpiration in a manner diametrically oppoſite to what it really is; ſo that, by applying their theory to the cure of wounds in the breaſt, they have followed a method altogether falſe. According to his experiments the lungs have not, as has been maintained, an expanſive force peculiar to them, but the movement is performed by the action of the diaphragm, to which ſufficient attention has not hitherto been paid. When there are wounds in the breaſt, the atmoſpheric air enters by them on inſpiring into the cavities of the thorax, and iſſues on expiring. This has been proved by experiments made on horſes, dogs, and cats.

MM. Herholdt and Rafn, in examining the manner in which the frog breathes, remarked, that this animal is without a diaphragm, and that its lungs at the ſame time have no expanſive force; but that a ſmall membrane, by means of which it can ſhut its mouth hermetically, diſcharges the function of the diaphragm; ſo that, when it is prevented from ſhutting its mouth by inſerting into it a ſmall rod, the animal dies in a few minutes, becauſe it is no longer able to breathe. When it is ſuffered to ſhut its mouth before it is entirely dead, or when it is only in a ſtate of aſphyxia, it ſoon recovers. If a frog be deprived of this membrane, by cutting it entirely off, or only in part, ſo that its mouth can no longer be hermetically ſhut, it expires in a longer or ſhorter time according to the ſize of the aperture made: on the firſt view it appears very paradoxical that man, as well as the greater part of animals, loſes his life by not being able to breathe when his mouth and noſe are ſhut, and that the frog dies becauſe it cannot breathe when its mouth is opened. The explanation of this phenomenon, however,

is eaſy when we recollect that the lungs have no expanſive force. In conſequence of this new theory, M. Herholdt has ſucceeded in curing very dangerous wounds made in the breaſts of dogs.

The above experiments, which were communicated to the Philomatic Society at Paris, by M. Manthey, were repeated with ſucceſs, by the commiſſioners of that ſociety, on frogs and ſalamanders. If a gag be put into the mouth of one of theſe animals, ſo as to prevent it from ſhutting its mouth, it dies at the end of half an hour. The reſpiration is performed as follows:—The mouth being abſolutely ſhut, the frog dilates its throat, and the air ruſhes in by the noſtrils; it afterwards contracts its throat, and the air penetrates to the lungs, becauſe, no doubt, there is a ſmall valve in the noſtrils which prevents it from eſcaping by the ſame way that it entered; for the membrane, which the Daniſh authors aſſert they obſerved in the mouth, could not be ſeen by the commiſſioners. Lizards and ſerpents, which have ribs, breathe like other animals; and a forced opening of the mouth does not kill them.

METHOD OF CHECKING DECAY IN TREES.

THE cheſtnut lives a long time, and often attains to an extraordinary ſize; but unfortunately the texture of its wood alters under certain circumſtances: it becomes ſoft, falls into duſt, a cavity is gradually formed in the heart of the tree, and this cavity, by the progreſs of the decompoſition, becomes ſtill larger; ſo that, at laſt, the trunk ſeems to conſiſt of nothing but bark; and being too weak to ſupport the branches, and reſiſt the violence of hurricanes, it cannot long exiſt. It is by ſimilar changes and decompoſitions of the ligneous principle, that trees, which have been growing for ages, are ſeen to periſh in a very little time.

C. Chaptal, in travelling through different parts of France, and particularly the Cevennes and the department of Allier, obſerved, that a great number of cheſtnut-trees were hollow, and charred over the whole internal ſurface. He was told by the inhabitants of the country, that this proceſs was employed to ſtop the progreſs of the caries, which otherwiſe would deſtroy the whole tree. When they obſerve that this diſeaſe, which is very common and exceedingly fatal to the cheſtnut-tree, begins to make any progreſs, and to excavate the trunk, they collect heath and other vegetables, and ſet fire to them in the cavity, till the whole ſurface is completely charred. It happens very rarely that the tree periſhes by this operation, and it is always found that this remedy ſuſpends the effect of the caries. It is practiſed with the ſame ſucceſs on the white oak. By comparing the effects of the cautery on the human body, in analogous caſes of degeneration, we perceive a new ſimilarity between diſeaſes which affect the living organized being of the two kingdoms, and between the remedies by which they may be checked.

FREEZING OF THE NEVA; PALACE OF ICE.

THE covering of the Neva with ice, and the breaking up of it, are remarkable phenomena. When the ice is ſetting-in, as it is called, ſmall detached flakes of ice are ſeen floating down the current, which ſoon grow into large fields, and acquire ſo great a momentum, that

that the bridges muſt be haſtily taken aſunder, to prevent their being carried away by the ice, a diſaſter which has happened more than once. Theſe large plains of ice continue for a day or two paſſing with the current, while the boats are ſeen rowing between them; till all at once the floating ice ſtops, either by the gulf being already cloſed below, or the flakes of ice freezing together: when immediately foot paſſengers, who have been waiting on the ſhores for this happy moment, go over in all ſafety. Nothing is more common than to ſee boats croſſing the river, and, in two hours afterwards, to behold hundreds of people going over on foot.

No leſs rapid is the departure of the ice. In the ſpring, the firſt indication of this approaching event is the ſtanding of the ſnow-water on the ice; then the ice becomes more porous, or divides into ſpiculæ, lets the water through, and becomes of a blackiſh colour. At length it parts, while the roads that have been well trod during the winter ſtill remain; ſo that often foot paſſengers are ſeen on theſe roads, and between them and the floating ſheets of ice, boats in great numbers paſſing and repaſſing. By the force of the current, and ſhocks received from the floating ice, at length the roads give way; the ice continues to fall down with the ſtream for a day or two to the gulf, and the whole river is clear. A week or a fortnight after this, the ice of the Ladoga comes down; which, according as the wind may happen to be, continues a couple or more days, ſometimes as many weeks, and renders the atmoſphere uncommonly chill.

The ice and the cold are of ſervice to the inhabitants in various ways. Diſtances are much ſhortened by their means, inaſmuch as people, horſes, and carriages of all ſorts, and of ever ſo great burden, can croſs the Neva, and the other rivers, lakes, and canals, in all places and directions; and the Cronſtadt gulf ſupplies, in ſome meaſure, the want of navigation during the winter, by the tranſport of commodities of every denomination over the ice. As ice-cellars here are a neceſſary of life, for keeping proviſions of all kinds during the ſummer, ſo every houſe in every quarter of the town is provided with one of them, to be filled with large blocks cut out of the river. This operation generally takes place about the beginning of February. The ice alſo promotes the pleaſure of the inhabitants by giving them an opportunity for the diverſion of ſledge and horſe-racing, and for that of the ice-hills, ſo much admired by the populace. The weight of theſe ice-hills, together with that of a multitude ſometimes of 5000 or 6000 perſons ſtanding about them on holidays, give the ſpectator a ſurpriſing idea of the ſtrength and ſolidity of the ice.

What may be executed in ice was ſhewn by the ice palace which the Empreſs Anne cauſed to be built on the bank of the Neva, in 1740. It was conſtructed of huge quadrats of ice hewn in the manner of free ſtone: the edifice was fifty-two feet in length, ſixteen in breadth, and twenty in height. The walls were three feet thick. In the ſeveral apartments were tables, chairs, beds, and all kinds of houſehold furniture, of ice. In front of the palace, beſides pyramids and ſtatues, ſtood ſix cannon carrying balls of ſix pounds weight, and two mortars, of ice. From one of the former, as a trial, an iron ball, with only a quarter of a pound of powder, was fired off. The ball went through a two-inch board, at ſixty paces from the mouth of the cannon; and the piece of ice artillery, with its lavette, remained uninjured by the exploſion. The illumination of the ice palace at night had an aſtoniſhingly grand effect.

HOOLE's

HOOLE's TRANSLATION OF LEEUWENHOEK, No. IV.

DESCRIPTION OF THE ANIMALCULE, FLOUNDER, OR INSECT, WHICH OCCASIONS THE ROT IN SHEEP.

Illuſtrated with a Plate.

TO make my obſervations on this ſubject the more intelligible, I ſhall place them in the following order: Firſt, as to the ſhape and make of this animalcule; Secondly, the part of the inteſtines where it is found; Thirdly, its numbers, and the manner of its propagation; and Fourthly, how theſe creatures, and other animalcules of a ſimilar nature, by fixing themſelves in the liver and other internal parts of the body, can produce certain diſeaſes, and their fatal conſequences.

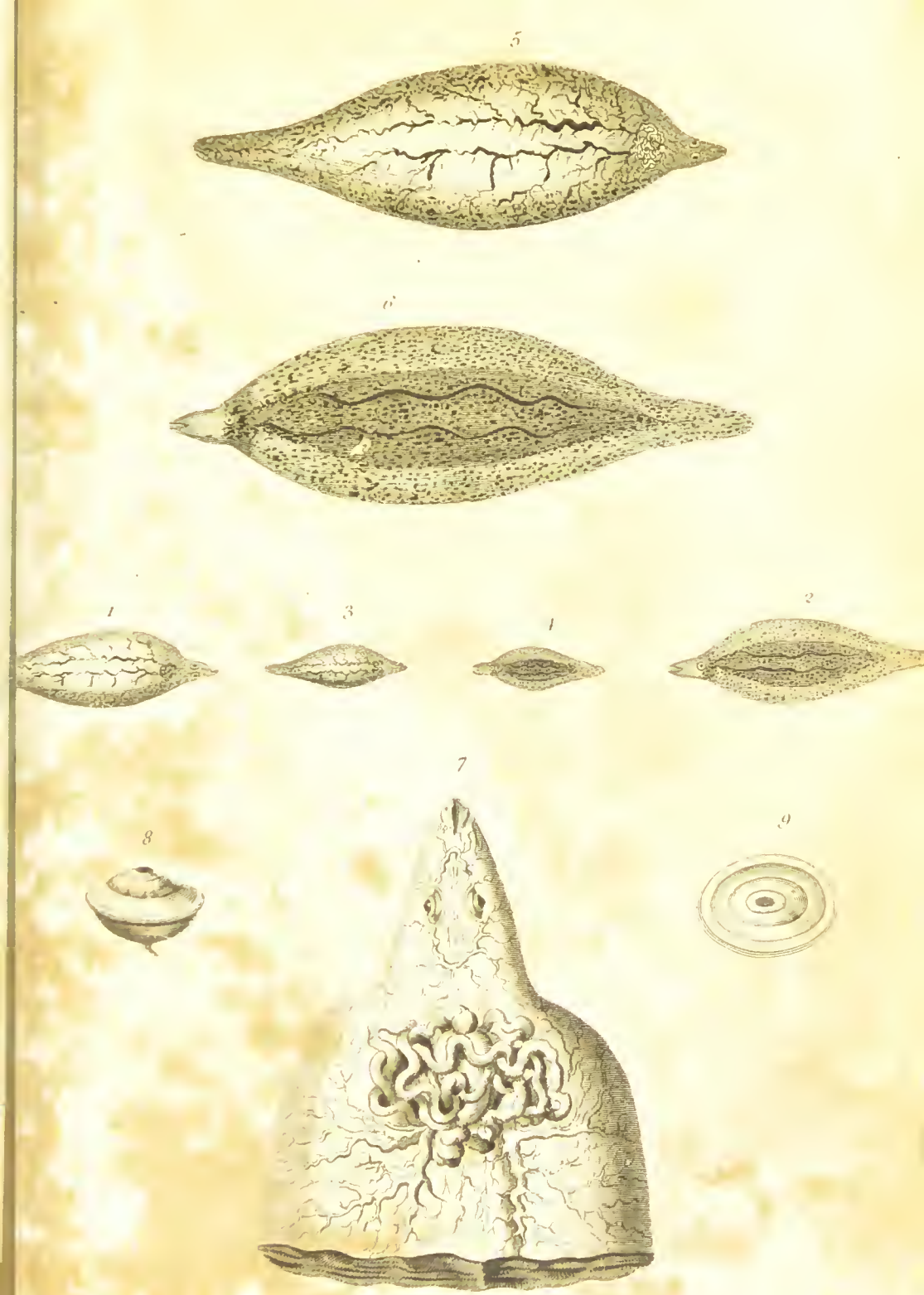
Firſt, as to the ſhape and ſize of this creature, and its ſimilitude to other known animals; it bears a near reſemblance (in miniature) to our ſole or flounder, as appears by *fig.* 1, which repreſents it of the ſize it is commonly found; this figure ſhews the back or prominent ſide; and *fig.* 2, the belly, or flat ſide of it. *Fig.* 3, is one of the young of the ſame ſpecies, ſhewing the back; 4, the belly of the ſame; 5 and 6, are figures of the ſame creatures magnified, and ſhewn in the poſitions before mentioned.

Theſe animals are not often ſeen alive, becauſe the diſeaſe they produce does not always ſhew itſelf by outward tokens, and the beaſt afflicted with them ſometimes ſeems fat and in good health, and then the liver is not perhaps examined till ſome time after the beaſt is killed; and theſe creatures cannot endure cold, but, if by being expoſed to it they are deprived of motion, they will revive, if the liver be held in a warm hand, or put into warm water. Their motion is undulating or wriggling, like that of the fiſhes before mentioned, their colour a yellowiſh brown, the belly quite flat, and much paler coloured than the back; the ſkin rough and covered with prickles or points, and ſo tranſparent, that the bowels and veſſels may plainly be ſeen on both ſides. The head (which is ſhewn conſiderably magnified at *fig.* 7) is of a pointed form, plano-convex, that is, rounding above and flat below, the mouth projecting, open, and of an oval ſhape, nearly in faſhion like a carp. The eyes, which are pictured ſeparately at *fig.* 8 and 9, are very prominent, ſurrounded with a cartilaginous or griſtly ring, and are placed, as we ſee in many flat fiſhes, both on the back, or upper ſide, with a diviſion between them.

The heart is ſo near to the head, and the bowels ſo cloſely conjoined to the heart, that I queſtion whether there is any thing properly to diſtinguiſh the head from the reſt of the body, which yet in moſt animals are ſeparate and diſtinct. From the heart ariſe two veſſels ſpreading over the whole body, with a wide ſpace between them, extending almoſt the whole length of the back, as repreſented at *fig.* 10, and between theſe veſſels are many ſmaller ones, as ſhewn at *fig.* 11, which are ſo minute that no moiſture can be diſcovered within them. I obſerved in the larger veſſels, two ſorts of juices, namely, in ſome a yellowiſh brown, and ſometimes a kind of purple; in others a pale green; both of a glutinous or ſlimy nature, and yet flowing in the veſſels (even after the death of the animal,) towards the heart, if held up by the tail, and back again, upon the head being raiſed.

The excretory duct, or paſſage of the bowels, is in an unuſual place, being on the right ſide of the body, cloſe under the head, for which

reaſon



Pass sculp

...ew of the Flounders or Insects, which occasion the Rot in Sheep

reaſon the inteſtines are as it were, crowded together in an heap. There is a ſmall protuberance at the beginning of the bowels, which I take to be the liver; and between this and the bowels, I find in all of thoſe animalcules which I have examined, an innumerable quantity of oval particles, hundreds of which, taken together, are not equal to the ſize of a grain of ſand. They are of a pale red colour, and I take them to be the ſpawn or eggs. Notwithſtanding my moſt diligent examination of theſe creatures, I never could diſcover any difference of ſexes; and it ſeems to me moſt probable, that they are of that ſpecies called Hermaphrodites, or every one equally prolific; at leaſt, none has ever fallen into my hands which appeared plainly to be a male. The tail, though of the ſame texture with the reſt of the body, is much tenderer, breaking or tearing upon the ſlighteſt touch.

The parts in ſeveral animals wherein I have hitherto found theſe creatures, are only the veſſels, tubes, and channels, wherein the gall is formed and collected, though moſt commonly in the liver, and here they may be ſaid to ſwarm, producing grievous ſwellings, calloſities, contorſions, and ſinuſes in the part; and cavities which will be often found an inch and an half in diameter. In thoſe parts theſe noxious animalcules are found in heaps, and the places where they lie become hard and cartilaginous. In the ſmall gall-ducts they lie longitudinally, and ſometimes rolled or curled up together; and I believe that many perſons have hereby been led into a miſtake reſpecting the ſhape of them, deſcribing them to be oblong round worms; but in truth, however cloſely they may be thus rolled up, they will ſpread open again, even after they are dead, upon being thrown into warm water, for then they recover their flat ſhape, but at the ſame time they become rather of a paler colour than they originally were.

Theſe creatures are commonly found in great numbers, though in this particular they vary much, as it depends on their having had more or leſs time to propagate. I have taken out of one liver 870 in number, beſides many fragments, and excluſive of thoſe which were cut in pieces or deſtroyed in opening the liver. And in another liver I have ſeen but ten or twelve.

They are found in many different kinds of animals. I have been informed by hunters, that they have found them in ſtags, wild boars, and other kinds of game, both great and ſmall. I myſelf have ſeen them frequently in calves, and once in a young bullock. Sheep are infeſted by them even from the womb of the parent, and lambs of a year old and upwards, as well as aged ſheep.

As to the production and propagation of theſe animalcules, I conſider as idle tales, what ſome writers aſſert, of their being generated by putrefaction or decayed ſubſtances, immoderate wet or heats, and other equally ſenſeleſs imaginations; and I lay it down as a certain truth, that theſe, as well as all other ſmall living creatures, are produced from their like, by the means of eggs, ſeed, or ſpawn, according to the nature implanted in them at their firſt creation. And it ſeems to me moſt probable, that theſe animals, with their eggs, find their way into the bodies of ſheep, (and which we may ſuppoſe to be the caſe alſo with other inſects and their eggs,) in the following manner; namely, that in wet ſummers and autumns theſe animalcules, which are originally bred on the ſurface of the earth, may, with the water in which they live, be ſwallowed by the ſheep, and find a nidus in the liver. It muſt ſeem ſtrange to us that a creature, originally bred in the water,

ſhould

ſhould find a proper receptacle for its life and growth in the warm bowels of an animal; and yet we daily ſee leeches, which are alſo bred in the water, and perfectly cold themſelves, ſuck the warm blood of the human ſpecies with an avidity ſcarcely to be parallelled. But, as Mr. Leeuwenhoek, in one part of his works, obſerves, we may wonder at theſe operations of nature, but admiration, and nothing more, will be the reſult of our cogitations. But I am not of the opinion, that after being ſwallowed, they do themſelves force their way out of the ſtomach and bowels into the gall-bladder; I rather conclude, from reaſon and my own experience, that their ſpawn or eggs may, with the oily part of the chyle in the infected beaſt, be carried into the veſſels of the gall bladder, and there fix themſelves; foraſmuch as theſe veſſels are lined with a ſlimy and tenacious ſubſtance, and alſo becauſe the gall is not like the blood, in continual circulation, but is retained in its veſſels, or emitted, as the calls of the animal œconomy require. Again, they are found ſwarming in the liver, where they produce tumours and calloſities, and cauſe the colour of it to change. And it ſeems to me not at all ſurprizing that theſe animalcules ſhould live and be nouriſhed in the juices of the gall, for every living creature has a ſituation and ſpecies of food peculiar to itſelf. Sea-fiſh die in freſh, and river-fiſh in ſalt, water. A worm cannot live in the air, and a fowl expires in the earth. What wonder is it then that the creature of which we are treating, when introduced into the body of another animal, ſhould find its peculiar place of life, growth, and increaſe, in the veſſels of the gall, and in the gall itſelf?

In the laſt place, like as we experience, that many living creatures are found in the human body, producing diſeaſe, pain, and death itſelf; ſo it is my opinion, that the animalcules of which I have been treating, and which are ſometimes found together by thouſands, may produce the following miſchievous conſequences:

Firſt, the extraordinary diſtention of the parts where they harbour, as well by the growth and increaſe of their own bodies, as by the multiplication of their ſpecies or brood.

Secondly, by their biting or gnawing the parts they infeſt, ſo as at length to break or deſtroy their texture; and thus wholly, or in part, render them incapable of performing their functions.

Thirdly, by forcing their bodies into the ſmall tubes and veſſels, whereby the delicate frame of thoſe tender parts is torn aſunder.

Fourthly, by obſtructing the paſſages in the veſſels, whereby the circulation of the juices is prevented, and an inflammation enſues.

Fifthly, by devouring and conſuming the nutritive juices, whereby the adjacent parts are deprived of their ſupport and nouriſhment.

Sixthly, by clogging the veſſels with their excrements, their eggs or ſpawn, and the bodies of ſuch of the animalcules themſelves as die, whereby the motion of thoſe parts being impeded, the moſt fatal conſequences follow.

There are many other ways in which theſe creatures may prove noxious to animals, but thoſe which I have here enumerated may be ſufficient to give an idea of the reſt.

He, then, who can find out and practiſe a method whereby, without injury to the parts of the body where theſe vermin harbour, can prevent their gnawing the parts, their creeping about in the inteſtines, and what is worſe, their dying there, or rather, can diſcover how to expel them while alive out of the body, will in this reſpect bid fair to effect a cure.

cure. It is laid down as a truth, that a diſtemperature of the blood and juices, whether proceeding from an ill conſtitution thereof, or from an interruption in the circulation, can cauſe many diſeaſes and their ill conſequences: but muſt it therefore be deemed unreaſonable to attempt proving, that animalcules being found in the juices, or even in the more ſolid parts of the body, may alſo produce diſeaſes? The firſt of theſe points is mere matter of theory or argument; of the ſecond, more certain proofs can be brought; conſequently, it ſeems more rational, that thoſe perſons, who altogether rely upon their experience, ſhould, in their enquiries, diligently inveſtigate the reaſons on which they found their opinions.

Since the peruſal of this Eſſay, the Tranſlator has had opportunities of converſing with ſeveral gentlemen, converſant in the grazing of ſheep, from whom he has collected the following particulars:

That in very wet ſeaſons, particularly towards the latter end of the year, a ſpecies of graſs ſprings up in the low and wet lands, by feeding on which the ſheep are ſuppoſed to contract the diſtemper called the rot. That, if the rains do not abound until after the winter froſt has been experienced, the ſheep are not then obnoxious to this diſeaſe, but otherwiſe if a wet ſeaſon precedes the froſt; and laſtly, that ſheep infected with this diſeaſe do for a time appear fat and healthy, but, when the diſorder gets to a height, they fall away rapidly.

Theſe particulars ſeem to prove, that the diſeaſe called the rot in ſheep does in fact proceed from the animal deſcribed in the preceding Eſſay, which being bred in the marſhes, and adhering, with its eggs, to the graſs growing in watery places, is ſwallowed by the ſheep. And it is probable that when the froſt precedes a wet ſeaſon, the animalcules and their eggs are killed by the froſt, and conſequently the ſheep eſcape; we may alſo conclude, that, while this noxious animalcule is in an infant ſtate in the bowels of the ſheep, it may not be particularly injurious, but when it arrives at a ſize to prey upon the liver, firſt a ſickneſs, and waſting in the animal, and afterwards death, muſt enſue; and the Tranſlator has been informed by a gentleman's gamekeeper, that he has frequently found hares dead of this diſeaſe, and that, upon opening them, hundreds of the animalcules were found in their livers.

The animalcule before deſcribed is called in ſome countries a Fluke, in others a Loop, but moſt generally a Flounder, probably from the reſemblance it bears to the fiſh of that name.

Several receipts for the Rot have been publiſhed at different times, of which the moſt approved have been already given in the annexed Natural Hiſtory, vol. iii. p. 129, &c. to which we refer the reader.

A remedy for this diſeaſe has alſo been lately offered to the public, under ſanction of letters patent, granted to the diſcoverer, Mr. Thomas Fleet, an opulent farmer, at Preſton Candover, near Baſingſtoke, in Hampſhire. The patent ſets forth the ingredients as follows: Turpentine, bole-armenic, turmeric, quickſilver, brimſtone, ſalt, opium, alkanet-root, bark, antimony, camphor, and diſtilled water; to be prepared according to chemical, and compounded according to medical, art.

THE NEWLY ELECTED POPE, PIUS VII.

PIUS the VIIth, whoſe ſecular name was Gregory Barnabas Chiaramonte, was born in the year 1742, in the ſmall town of Ceſena, in Romagna, already honoured by the birth of his immediate predeceſ-

for, the late Pius VI. He was alſo, like him, deſcended from a noble but reduced family; his father had the title of *Count*; and his anceſtors, although ſettled in Italy, and ranked in the Ceſenate nobility for many centuries paſt, were accounted of a French extraction, and ſuppoſed to have come from the town of *Clermont*, in Auvergne, whence the Italian name of *Chiaramonte* was derived.

His holineſs evinced, from his earlieſt years, a ſober and a ſedate mind, an uncommon diligence in ſtudies, and a degree of prudence much ſuperior to what can generally be expected from young people of a tender age. His friends, therefore, were not long in concluding from ſuch diſpoſitions, that a quiet, retired, and contemplative, life, would be ſuitable to him; and reſolved, of courſe, that he ſhould take the religious habit in a monaſtic order competent to his rank. Accordingly he was, in his 16th year, received into the Benedictine; an order which, from its very foundation, has been, in Italy at leaſt, the excluſive ſanctuary of the higheſt nobility; and, very often, the aſylum of princes and kings diſappointed in the world.

The career of Chiaramonte in the clauſtral dignities was neither rapid nor brilliant; but, what is perhaps better, regular, rational, and analogous to his character. No ſooner had he become a prieſt, than he was by his ſuperiors ſummoned to Rome, for the purpoſe of taking his reſidence in the large convent of St. Paul, in that metropolis, accounted the richeſt Benedictine community in the papal dominions; and known, in all Europe, for being contiguous and ſubſervient to the famous Baſilic of the ſame name. There he was for ſeveral years inſtructor of novices; next, profeſſor of divinity; and, when near forty, abbot, a conſpicuous and independent dignity, and the higheſt preferment ever to be hoped by a Benedictine; as, according to a ſtanding and unalterable article of their conſtitution, there cannot exiſt either a general of the order, or any other chief above the abbots.

His conduct, whilſt abbot of St. Paul, was ſuch as had been predicted by thoſe who were acquainted with his character; an inflexible ſupporter of the monaſtic diſcipline, and, at the ſame time, an accompliſhed gentleman in mildneſs, affability, and politeneſs. It was uſual for him to ſpend the whole winter in the convent of St. Paul, and the remainder of the year in that of St. Caliſto, in Traſtevere; as the former place, owing to the ſtagnation of waters in the Tyber, was unwholeſome and dangerous in ſummer time. His income, as abbot, was full 5000 Roman crowns (1000l. ſterling), of which the greateſt part he beſtowed in acts of charity, chiefly directed to relieve honeſt families in diſtreſs.

Eminent merit, howſoever it may be concealed in the receſſes of obſcurity, or wrapped in the veil of modeſty, cannot fail at length to tranſpire and attract the public notice. Chiaramonte, quite unexpectedly, was, by the late pope, his countryman, appointed biſhop of Tivoli, in the neighbourhood of Rome. This election did certainly great honour to Pius VI. as it proved how ſagacious he was in diſcovering, and forward in promoting, a worthy clergyman out of the circle of an ambitious court. As to the candidate himſelf, however, it muſt, we venture to ſay, have been utterly indifferent; for, except the honour of belonging actually to the ſecular hierarchy of the Roman clergy, and the vanity, if he had any, of being *è clauſtris in aulam revocatus*, he was rather a loſer through the promotion. The biſhopric of Tivoli yielded little above 5000 crowns, and his holineſs was too good a clergyman, and too well aware of the eccleſiaſtical laws, not to know that the income

income of a biſhop is, more rigorouſly than that of a Benedictine abbot, the eſtate of the poor.

His holineſs had hitherto diſplayed his moral character, merely as a chief of a religious order; and his intellectual powers, only as an excellent divine. His new dignity ſoon enabled him to acquire alſo the reputation of a ſuitable governor to a ſecular clergy, and of an eminent canoniſt and civilian. Never, perhaps, the dioceſe of Tivoli was happier, than under his epiſcopate. He was a ſevere guardian of the morals of his clergy, and an attentive obſerver of their improvement in ſcience. He puniſhed their faults rigorouſly, and, nevertheleſs, he was generally beloved by them. He performed towards the people at large all the duties of his ſtation, and, very often, the functions of a common clergyman; and, as his religious ſentiments had no mixture of hypocriſy or fanaticiſm, he ſometimes indulged in the pleaſures of ſociety, ſpent his evenings in familiar converſations with a ſelect number of friends; and, when he had opportunities, gave alſo concerts of muſic in his palace, where ladies and gentlemen were admitted, and treated with uncommon kindneſs and liberality. The conſequence of this behaviour towards the Tivoleſe was their univerſal regret, when he happened three years after to be promoted to the biſhopric of Imola, in Romagna, and to the cardinalſhip.

The biſhopric of Imola is one of the beſt benefices of the kind in the Roman ſtate. It yields upwards of 12,000 crowns (nearly 2500l. ſterling.) Chiaramonte was, however, far from being rich, as a cardinal, by the ſole revenues of his epiſcopal ſee; and, by a peculiar circumſtance which is deſerving of record, he was not able to obtain any farther favour from his court, at the time of his promotion to the purple, as he might juſtly have expected, and as it really was the cuſtom of the papal government in ſuch caſes. The late pope had, cotemporarily with him, conferred the ſame dignity on two Neapolitan prelates, reſiding in Rome, Pignatelli and Ruffo, in hopes that his Sicilian majeſty would grant to theſe two cardinals, his ſubjects, ſome of the rich abbeys in the kingdom of Naples, which then happened to be vacant. Pius VI. was, as uſual, diſappointed by the noted cabals of the Neapolitan *Paglietti* and *Pulcinelli*. He felt, therefore, the neceſſity of providing for Ruffo and Pignatelli many commanderies, abbeys, and benefices, in the Roman ſtate; and was obliged, of courſe, to deprive his own ſubjects of theſe important emoluments.

The Biſhop of Imola always lived in his dioceſe, and very ſeldom viſited Rome. For, beſides the ſenſe of his paſtoral duties towards his clergy and people, he might alſo have been induced to keep far from the metropolis, by the additional conſideration that he was not able to ſupport, with his ſmall income, the high ſtyle of a cardinal at court.

On the 11th of March laſt, in the 58th year of his age, he was elected pope by the conclave at Venice, and proclaimed under the name of Pius the VIIth; with the higheſt rejoicings of the Venetians, and the general ſatisfaction of all the Italians. He is the firſt Benedictine monk who has occupied the papal throne, in modern times; as it is known that the illuſtrious order of St. Benedict had, in the middle ages, governed the church almoſt excluſively, for nearly three centuries, and occaſioned of courſe a convention, that no individual belonging to it ſhould ever after be elected pope.

On CASUAL MUTILATIONS becoming HEREDITARY MARKS of DISTINCTION.

THAT it is poſſible for mutilations produced in the bodies of animals, either by accident or by artificial means, eſpecially when repeated through a whole ſeries of generations, to degenerate in the courſe of time into hereditary marks of diſtinction, ſeems *à priori* to be incontrovertible. At any rate, who can aſſign a reaſon why this ſhould not be as poſſible as the tranſmiſſion of hereditary organic diſeaſes, or hereditary monſtroſities, or the moſt individual traits in family likeneſſes, ſuch as a thick under-lip, ſtrong eye-brows, and ſo on, which certainly did not all deſcend from Adam; but which have firſt appeared at a certain generation, and ſince that period have been continued, with more or leſs conſtancy, by hereditary tranſmiſſion.

Inſtances among Animals.—We ſhall begin with a recent one, mentioned by M. Schulz in his *Obſervations*, p. 17. "A Spaniſh bitch," ſays he, "which had been in my poſſeſſion for ſeveral years, was not only brought forth without a tail, but at various times produced puppies ſome of whom were deſtitute of tails alſo. As often as this bitch brought forth more than one puppy, one of them, perhaps, was quite perfect; the greater part, however, had half tails or tails ſtill ſhorter, and one at leaſt had no tail at all. The moſt ſingular thing was, that the young almoſt always had a reſemblance to the father, whether grey-hound, ſpaniel, &c. in regard to colour and bodily conformation; and deriving nothing more from their mother, the Spaniſh bitch, than the ſingularity of having only the third part of a tail, or no tail at all."

We are told by Sir Kenelm Digby, that, the tail of a cat having been cut off when young, ſome of the kittens which ſhe afterwards brought forth were always without tails. Nathaniel Highmore, who, in explaining the nature of generation, differs ſo much from Sir Kenelm, ſays, that he ſaw a bitch which wanted almoſt the whole tail from the rump, and that the half of her young were brought into the world with tails, and the other half without. Buffon aſſerts, that he ſaw dogs, the ears and tails of which had been cropped for many generations, and which transferred this mutilation, either totally or in part, to their poſterity. M. R. Maſch, of New Strelitz, gives an account, in the *Naturforſcher*, of a butcher's dog, the tail of which, according to cuſtom, had been cut off, and which having copulated with a ſhe-wolf, that had been caught, the latter produced three baſtards. Among theſe was a male, half grey like the father, and born with a cropped tail; ſo that the caſual mutilation of the dog, as the author ſays, was transferred to this baſtard.

We are told by D. Forſter, that it has been remarked in England, that when horſes are continually docked, and both ſtallions and mares kept ſo for many generations, the foals, at laſt, come into the world with ſome articulations fewer in the tail. Buffon has enlarged prettyfully on this ſubject, and endeavoured to prove, by the help of anatomy, that the calloſities on the breaſt-bone and knees of the camel are merely the conſequence of their ſubjection, and the force by which theſe animals of burden, as is well known, are obliged to kneel down; and as the young camels, when brought forth, have calloſities of the like kind, he gives this as a proof of the hereditary tranſmiſſion of ſuch variations produced by art.

Inſtances

Inſtances among the Human Species.—Cardan ſpeaks of the well-known ancient cuſtom of the Peruvians of Puerto Viego, who preſſed between boards the heads of their new-born children. This cuſtom, however, became afterwards like a ſecond nature; ſo that, in the courſe of time, children were brought into the world with heads formed in that ſingular manner: and Cardan expreſsly ſays, that this flatneſs of the head was originally the work of art, and not of nature. Hippocrates, in his work upon air, water, and climate, mentions ſomething of the like kind in regard to the Macrocephali, a people on the borders of the Black Sea, who preſſed the heads of their new-born children; and this practice repeated, through many generations, produced at length an hereditary diſtinction; ſo that the children were born with heads of a particular form. "At firſt," ſays he, "the practice of the country ſeems to have been the cauſe of this conformation; but cuſtom afterwards became nature. Thoſe who had the largeſt heads were conſidered as the nobleſt; and for this reaſon the Macrocephali preſſed the yet pliable tender heads of their children with their hands, and forced them to extend in length by bandages and other means. This artificial proceſs gave occaſion to the ſubſequent increaſe of ſize in the head among theſe people, ſo that artificial means were no longer requiſite for that purpoſe." Hippocrates, however, adds in a ſhort ſection, "That in his time their heads had no longer that ſingular form completely, becauſe they had entirely neglected the above artificial means of formation." But that this very little contradicts his preceding account and opinion is ſhewn by the intermediate paſſages, where he endeavours to explain the phenomenon from his well-known theory of generation: "The generative matter," ſays he, "is collected from all parts of the body; from ſound bodies it comes ſound, and from diſeaſed bodies diſeaſed: now, as bald heads, blue eyes, and over-grown bodies, are tranſmitted in families, and the like rule takes place in other circumſtances of conformation, why ſhould not children, with great heads, be produced by great-headed parents?" Hippocrates, therefore, evidently meant only that in the courſe of time nature ſometimes abandons forms ſhe has aſſumed, and returns again to the original.

Ariſtotle, in his work on the generation of animals, ſpeaking of the grounds on which the theory of Hippocrates reſpecting generation is founded, ſays: "It is very probable for this reaſon, beſides others, that children not only reſemble their parents in internal and innate properties, but even in external marks which are merely caſual; for there are inſtances of moles being tranſmitted from parents to their children, and on the very ſame parts of the body." He himſelf quotes a Chaldean, who, having a mole on his arm, tranſmitted it to his ſon, though in the latter it was not ſo apparent as in the father. Pliny alſo, where he treats of marks, moles, and the like, being ſometimes inherited by children, adds, by way of example: *Quarto partu Dacorum originis nota in brachio redditur.* In my opinion, this paſſage alludes to the hereditary tranſmiſſion of moles among the Dacians, Illyrians, &c. who, according to the teſtimony of many of the ancients, were diſtinguiſhed by this ſingularity.

A ſtaff-officer, who lived in the neighbourhood of Stockholm, in his younger days, had received a wound in the little finger of his right hand, which had been rendered crooked during the cure; and his ſon and daughter were born each with the little finger of the ſame hand crooked.

Profeſſor

Profeſſor Blumenbach adds ſome very curious information on this ſubject:—"A literary man, of very great acuteneſs, when converſing with me on this ſubject, ſtarted the following objection: If artificial mutilations can become hereditary, children born of circumciſed parents muſt often be born without the foreſkin, which does not appear to be the caſe. At that time I was acquainted with only one inſtance of this kind in Steph. Gerlach's Journal; but one example did not appear to me to be of any peculiar weight. I, however, once happened to aſk a Jew of this place, a man not deſtitute of learning, and well acquainted with the ritual of his nation reſpecting this circumſtance, and was told that it frequently happened that the children of the Jews were brought into the world with ſo ſhort a foreſkin that it required an experienced and careful hand to circumciſe them. This innate deficiency is diſtinguiſhed by a particular Hebrew appellation, *nauld mohl*, or born circumciſed. His own father, who had circumciſed above 700 boys, and who was celebrated on account of his expertneſs in this caſe, not at all uncommon, often ſpoke of the difficulty of performing the operation under ſuch circumſtances. In a word, what had appeared to me an argument againſt the hereditary tranſmiſſion of artificial mutilations, became unexpectedly an important argument in its favour. I will, however, readily acknowledge, that all the caſes above mentioned may not be of equal authenticity, and equally incontrovertible; but even though the leaſt improbable ſhould be rejected, there will ſtill remain, to ſupport the probability of the thing, as many as could be deſired for a propoſition which cannot well be proved by direct experiments made for the purpoſe."

ACCOUNT OF THE PEARL FISHERY IN THE GULPH OF MANAR, 1797. *By* HENRY J. LE BECK, *Eſq*;

FROM the accounts of the former pearl fiſheries at Ceylon, it will be found, that none have ever been ſo productive as this year's. It was generally ſuppoſed that the renter would be infallibly ruined, as the ſum he paid for the preſent fiſhery was thought exorbitant when compared with what had been formerly given: but this conjecture in the event appeared ill founded, as it proved extremely profitable and lucrative.

The farmer this time was a Tamul merchant, who, for the privilege of fiſhing with more that the uſual number of donies or boats, paid between two and three hundred thouſand Porto-novo pagodas; a ſum nearly double the uſual rent.

Theſe boats he farmed out again to individuals in the beſt manner he could; but, for want of a ſufficient number of divers, ſome of them could not be employed.

The fiſhing, which commonly began about the middle of February, if wind and weather allowed, was this year, for various reaſons, delayed till the end of the month; yet, ſo favourable was the weather, that the renter was able to take advantage of the permiſſion granted by the agreement, to fiſh a little longer than the uſual period of thirty days.

The fiſhery cannot well be continued after the ſetting-in of the ſouthern monſoon, which uſually happens about the 15th of April, as, after that time, the boats would not be able to reach the pearl banks, and the water being then ſo troubled by heavy ſeas, diving would be impracticable; in addition to which, the ſea-weed, a ſpecies of *fucus*, driven in by the ſoutherly wind, and which ſpreads to a conſiderable diſtance from the ſhore, would be an impediment.

Many

Many of the divers, being Roman Catholics, leave the fiſhery on Sundays to attend divine ſervice in their church at Aripoo; but if either a Mahomedan or Hindoo feſtival happens during the fiſhing days, or if it is interrupted by ſtormy weather, or any other accident, this loſt time is made up by obliging the Catholics to work on Sundays.

The fear of ſharks is alſo another cauſe of interruption. Theſe, amongſt ſome others, are the reaſons that, out of two months, (from February till April,) ſeldom more than thirty days can be employed in the fiſhery.

As this time would be inſufficient to fiſh all the banks (each of which has its appropriate name, both in Dutch and Tamul,) it is carried on for three or four ſucceſſive years, and a new contract annually made, till the whole banks have been fiſhed; after which they are left to recover.

The length of time required for this purpoſe, or from one general fiſhing to another, has not yet been exactly determined; it was, therefore, a practice to depute ſome perſons to viſit the banks annually, and to give their opinion, whether a fiſhery might be undertaken with any degree of ſucceſs?

From various accounts, which I have collected from good authority, and the experience of thoſe who aſſiſted at ſuch examinations, I conjecture, that every ſeven years ſuch a general fiſhery could be attempted with advantage, as this interval ſeems ſufficient for the pearl ſhells to attain their growth: I am alſo confirmed in this opinion by a report, made by a Dutch governor at Jafnas, of all the fiſheries that have been undertaken at Ceylon ſince 1722; a tranſlation of which is to be found in Wolfe's Travels into Ceylon. But the ruinous condition in which the divers leave the pearl banks at each fiſhery, by attending only to the profit of individuals, and not to that of the public, is one great cauſe that it requires twice the above-mentioned ſpace of time, and ſometimes longer, for rendering the fiſhing productive. They do not pay the leaſt attention to ſpare the young and immature ſhells that contain no pearl; heaps of them are ſeen thrown out of the boats as uſeleſs on the beach between Manar and Aripoo: if theſe had been ſuffered to remain in their native beds, they would, no doubt, have produced many fine pearls. It might, therefore, be adviſable to oblige the boat-people to throw them into the ſea again before the boats leave the bank. If this circumſpection, in ſparing the ſmall pearl ſhells to perpetuate the breed, was always obſerved, ſucceeding fiſheries might be expected ſooner, and with ſtill greater ſucceſs: but the neglect of this ſimple precaution will, I fear, be attended with ſimilar fatal conſequences here, as have already happened to the pearl banks on the coaſt of Perſia, South America, and Sweden, where the fiſheries are by no means ſo profitable at preſent as they were formerly.

Another cauſe of the deſtruction of numbers of both old and young pearl-ſhells is the anchoring of ſo many boats on the banks; almoſt all of them uſe differently formed, clumſy, heavy, wooden anchors, large ſtones, &c. &c. If this evil cannot be entirely prevented, it might, at leaſt, be greatly leſſened, by obliging them all to uſe anchors of a particular ſort, and leſs deſtructive.

This ſeaſon the Seewel Bank only was fiſhed, which lies above twenty miles to the weſtward of Aripoo, oppoſite to the freſh water rivers of Mooſalee, Modragam, and Pomparipoo. It has been obſerved, that the pearls on the north-weſt part of this bank, which conſiſts of rock,

rock, are of a clearer water than thoſe found on the ſouth-eaſt, neareſt the ſhore, growing on corals and ſand.

Condatchy is ſituated in a bay, forming nearly a half-moon, and is a waſte ſandy diſtrict, with ſome miſerable huts built on it. The water is bad and brackiſh, and the ſoil produces only a few, widely ſcattered, ſtunted trees and buſhes. Thoſe perſons who remain here during the fiſhery are obliged to get their water for drinking from Aripoo, a village with a ſmall old fort, lying about four miles to the ſouthward. Tigers, porcupines, wild hogs, pangolines, or the *Ceylon armadillos*, are, amongſt other quadrupeds, here common. Of amphibia, there are tortoiſes, eſpecially the *teſtudo geometrica*, and various kinds of ſnakes. A conchologiſt meets here with a large field for his enquiries. The preſents which I made to the people employed in the fiſhery, to encourage them to collect all ſorts of ſhells which the divers bring on ſhore, produced but little effect; as they were too much taken up in ſearching after the mother-of-pearl ſhells to pay attention to any other object. However, my endeavours were not entirely uſeleſs; I will ſpecify here a few of the number I collected during my ſtay: different kinds of *pectines*, *palium porphyreum*, *ſolen radiatus*, *Venus caſtrenſis Linn.* *aſtrea hyotis*, *oſtr. Forſkolii*, *oſtr. Malleus*, *mytilus hirundo Linn.* *ſpondilus crocius*, *pholas puſillus Linn.* *mitra epiſcopalis Linn.* *lepas ſtriata Pennanti*, (*vide Zool. Brit.*) *patella tricarinata Linn.* *bulla perfecta maculata*, *harpa nobilis*, *porcellana ſulita Rumph.* *ſtrombus ſcorpio*, and other of inferior kinds. Amongſt the *zoophytes*, many valuable ſpecies of *ſpongiæ*, *corallinæ*, *fatulariæ*, &c. a great variety of ſea-ſtars, and other marine productions, that cannot be preſerved in ſpirits, but ſhould be deſcribed on the ſpot. Theſe, as well as the deſcription of the different animals inhabiting the ſhells, are the more worthy of our attention, and deſerve farther inveſtigation, as we are yet very deficient in this branch of natural hiſtory.

During the fiſhing ſeaſon, the deſert barren place, Condatchey, offers to our view a ſcene equally novel and aſtoniſhing. A heterogeneous mixture of thouſands of people, of different colours, countries, caſts, and occupations; the number of tents and huts erected on the ſea-ſhore, with their ſhops or bazars before each of them; and the many boats returning on ſhore in the afternoon, generally richly laden; all together form a ſpectacle entirely new to an European eye. Each owner runs to his reſpective boat as ſoon as it reaches the ſhore, in hopes of finding it fraught with immenſe treaſure, which is often much greater in imagination that in the ſhell; and, though he is diſappointed one day, he relies with greater certainty on the next, looking forward to the fortune promiſed him by his ſtars, as he thinks it impoſſible for the aſtrological predictions of his Brahmen to err.

To prevent riot and diſorder, an officer with a party of Malays is ſtationed here. They occupy a large ſquare, where they have a field-piece, and a flag-ſtaff for ſignals.

Here and there you meet with brokers, jewellers, and merchants, of all deſcriptions; alſo ſuttlers, offering proviſions and other articles to gratify the ſenſual appetite and luxury. But by far the greater number are occupied with the pearls. Some are buſily employed in aſſorting them; for which purpoſe they make uſe of ſmall braſs plates perforated with holes of different ſizes; others are weighing, and offering them to the purchaſer; while others are drilling or boring them, which they perform for a trifle.

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The inſtrument theſe people carry about with them for this purpoſe is of a very ſimple conſtruction, but requires much ſkill and exerciſe to uſe it; it is made in the following manner: The principal part conſiſts of a piece of ſoft wood, of an obtuſe, inverted, conical ſhape, about ſix inches high and four in diameter in its plain ſurface; this is ſupported by three wooden feet, each of which is more than a foot in length. Upon the upper flat part of this machine are holes or pits for the larger pearls, and the ſmaller ones are beat in with a wooden hammer. On the right ſide of this ſtool, half a cocoa-nut ſhell is faſtened, which is filled with water. The drilling inſtruments are iron ſpindles, of various ſizes, adapted to the different dimenſions of the pearls, which are turned round in a wooden head by a bow. The pearls being placed on the flat ſurface of the inverted cone, as already mentioned, the operator, ſitting on a mat, preſſes on the wooden head of his inſtrument with the left hand, while, with his right, he moves the bow which turns round the moveable part of the drill; at the ſame time he moiſtens the pearl, occaſionally dipping the little finger of the ſame hand into the water of the cocoa-nut ſhell with a dexterity that can only be attained by conſtant practice.

Amongſt the crowd are found vagabonds of every deſcription, ſuch as pandarams, Andec or Hindu monks, fakirs, beggars, and the like, who are impertinently troubleſome. Two of theſe wretches particularly attracted the attention of the mob, though their ſuperſtitious penance muſt have diſguſted a man of the leaſt reflection: one had a grid-iron, of one foot and a half long, and the ſame in breadth, faſtened round his neck, with which he always walked about, nor did he take it off either when eating or ſleeping; the other had faſtened round that member which decency forbids me to mention, a braſs ring, and fixed to it was a chain, of a fathom in length, trailing on the ground; the links of this chain were as thick as a man's finger, and the whole was exhibited in a moſt ſcandalous manner.

The peſtilential ſmell occaſioned by the numbers of putrefying pearl fiſhes, renders the atmoſphere of Condatchey ſo inſufferably offenſive when the ſouth-weſt wind blows, that it ſenſibly affects the olfactory nerves of any one unaccuſtomed to ſuch cadaverous ſmells. This putrefaction generates immenſe numbers of worms, flies, muſkitoes, and other vermin, all together forming a ſcene ſtrongly diſpleaſing to the ſenſes.

Thoſe who are not provided with a ſufficient ſtock of money ſuffer great hardſhips, as not only all kinds of proviſions are very dear, but even every drop of good water muſt be paid for. Thoſe who drink the brackiſh water of this place are often attacked by ſickneſs. It may eaſily be conceived what an effect the extreme heat of the day, the cold of the night, the heavy dews, and the putrid ſmell, muſt have on weak conſtitutions. It is, therefore, no wonder, that of thoſe who fall ſick many die, and many more return home with fevers, fluxes, or other equally fatal diſorders.

The many diſappointments uſually experienced by the lower claſſes of men in particular, make them often repent of their coming here. They are often ruined, as they riſk all they are worth to purchaſe pearl ſhells: however, there are many inſtances of their making a fortune beyond all expectation. A particular circumſtance of this kind fell within my own obſervation: a day labourer bought three oyſters for a

copper fanam, (about the value of two-pence,) and was ſo fortunate as to find one of the largeſt pearls which the fiſhery produced this ſeaſon.

The donies appointed for the fiſhery are not all procured at Ceylon; many came from the coaſts of Coromandel and Malabar, each of which has its diſtinguiſhing number. About ten o'clock at night a gun is fired as a ſignal, when they ſail from Condatchey with an eaſterly or land wind, under the direction of a pilot. If the wind continues fair, they reach the bank before day, and begin diving at ſun-riſe, which they continue till the weſt or ſea-breeze ſets in, with which they return. The moment they appear in ſight, the colours are hoiſted at the flag-ſtaff, and in the afternoon they come to an anchor; ſo that the owners of the boats are thereby enabled to get their cargoes out before night, which may amount to 30,000 oyſters, if the divers have been active and ſucceſsful.

Each boat carries twenty-one men and five heavy diving-ſtones, for the uſe of ten divers, who are called in Tamul *kooly kârer*; the reſt of the crew conſiſts of a tandel, or head boatman, and ten rowers, who aſſiſt in lifting up the divers and their ſhells.

The diving-ſtone is a piece of coarſe granite, a foot long, ſix inches thick, and of a pyramidical ſhape, rounded at the top and bottom. A large hair rope is put through a hole in the top. Some of the divers uſe another kind of ſtone, ſhaped like a half moon, to bind round their belly, ſo that their feet may be free. At preſent theſe are articles of trade at Condatchey. The moſt common, or pyramidical ſtone, generally weighs about thirty pounds. If a boat has more than five of them, the crew are either corporally puniſhed or fined.

The diving, both at Ceylon and Tutucorin, is not attended with ſo many difficulties as authors imagine. The divers, conſiſting of different caſts and religions, (though chiefly of Parrawer and Muſſulmans,) neither make their bodies ſmooth with oil, nor do they ſtop their ears, mouths, or noſes, with any thing, to prevent the entrance of ſalt water. They are ignorant of the utility of diving-bells, bladders, and double flexible pipes. According to the injunctions of the ſhark conjurer, they uſe no food while at work, nor till they return on ſhore and have bathed themſelves in freſh water. Theſe Indians, accuſtomed to dive from their earlieſt infancy, fearleſsly deſcend to the bottom, in a depth of from five to ten fathoms, in ſearch of treaſures. By two cords a diving-ſtone and a net are connected with the boat. The diver, putting the toes of his right foot on the hair rope of the diving ſtone, and thoſe of his left on the net, ſeizes the two cords with one hand, and, ſhutting his noſtrils with the other, plunges into the water. On reaching the bottom, he hangs the net round his neck, and collects into it the pearl ſhells as faſt as poſſible during the time he finds himſelf able to remain under water, which uſually is about two minutes. He then reſumes his former poſture, and making a ſignal, by pulling the cords, he is immediately lifted into the boat. On emerging from the ſea, he diſcharges a quantity of water from his mouth and noſe, and thoſe who have not been long enured to diving, frequently diſcharge ſome blood; but this does not prevent them from diving again in their turn. When the firſt five divers come up, and are reſpiring, the other five are going down with the ſame ſtones. Each brings up about one hundred oyſters in his net, and, if not interrupted by any accident, may make fifty trips in a forenoon. They and the boat's crew get generally from the owner, inſtead of money, a fourth of the quantity which they bring on ſhore; but ſome are paid in caſh, according to agreement.

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The moſt ſkilful divers come from Colliſh, on the coaſt of Malabar; ſome of them are ſo much exerciſed in the art, as to be able to perform it without the aſſiſtance of the uſual weight, and for a handſome reward will remain under water for the ſpace of ſeven minutes: this I ſaw performed by a Caffry boy, belonging to a citizen at Karical, who had often frequented the fiſheries of theſe banks. Though Dr. Halley deems this impoſſible, daily experience convinces us, that, by long practice, any man may bring himſelf to remain under water above a couple of minutes. How much the inhabitants of the South-Sea Iſlands diſtinguiſh themſelves in diving we learn from ſeveral accounts; and who will not be ſurpriſed at the wonderful Sicilian diver Nicolas, ſurnamed the Fiſh?

Every one of the divers, and even the moſt expert, entertain a great dread of the ſharks, and will not, on any account, deſcend until the conjurer has performed his ceremonies. This prejudice is ſo deeply rooted in their minds, that the government was obliged to keep two ſuch conjurers always in their pay, to remove the fears of their divers. Thirteen of theſe men were now at the fiſhery from Ceylon and the coaſt to profit by the ſuperſtitious folly of theſe deluded people. They are called in Tamul *Pillăl Kaduăr*, which ſignifies one who binds the ſharks, and prevents them from doing miſchief.

The manner of enchanting conſiſts in a number of prayers learned by heart, that nobody, probably not even the conjurer himſelf, underſtands, which he, ſtanding on the ſhore, continues muttering and grumbling from ſun-riſe until the boats return: during this period they are obliged to abſtain from food and ſleep, otherwiſe their prayers would have no avail; they are, however, allowed to drink, which privilege they indulge in a high degree, and are frequently ſo giddy as to be rendered very unfit for devotion. Some of the conjurers accompany the divers in their boats; which pleaſes them very much, as they have their protectors near at hand. Nevertheleſs, I was told, that in one of the preceding fiſheries a diver loſt his leg by a ſhark; and, when the head conjurer was called to an account for the accident, he replied, that an old witch had juſt come from the coaſt, who, from envy and malice, had cauſed this diſaſter by a counter-conjuration, which made fruitleſs his ſkill, and of which he was informed too late: but he afterwards ſhewed his ſuperiority by enchanting the poor ſharks ſo effectually, that, though they appeared in the midſt of the divers, they were unable to open their mouths. During my ſtay at Condatchey, no accident of this kind happened. If a ſhark is ſeen, the divers immediately make a ſignal, which on perceiving, all the boats return inſtantly. A diver who trod upon a hammer-oyſter, and was ſomewhat wounded, thought he was bit by a ſhark, conſequently made the uſual ſignal; which cauſed many boats to return; for which miſtake he was afterwards puniſhed.

The owners of the boats ſometimes ſell their oyſters, and at other times open them on their own account. In the latter caſe, ſome put them on mats in a ſquare, ſurrounded with a fence; others dig holes of almoſt a foot deep, and throw them in till the animal dies; after which they open the ſhells, and take out the pearls with more eaſe. Even theſe ſquares and holes are ſold by auction after the fiſhery is finiſhed, as pearls often remain there mixed with the ſand.

In ſpite of every care, tricks in picking out the pearls from the oyſters can hardly be prevented. In this the natives are extremely dexterous. The following is one mode they put in practice to effect their

purpose: when a boat-owner employs a number of hired people to collect pearls, he places over them an inspector of his own, in whom he can confide; these hirelings previously agree that one of them shall play the part of a thief, and bear the punishment, to give his comrades an opportunity of pilfering. If one of the gang happens to meet with a large pearl, he makes a sign to his accomplice, who instantly conveys away one of small value, purposely, in such a manner as to attract notice. On this the inspector and the rest of the men take the pearl from him: he is then punished, and turned out of their company. In the mean time, while he is making a dreadful uproar, the real thief secures the valuable pearl, and afterwards the booty is shared with him who suffered for them all. Besides tricks like these, the boat-owners and purchasers often lose many of the best pearls while the dony is returning from the bank; for, as long as the animal is alive, and untouched, the shells are frequently open near an inch; and if any of them contain a large pearl, it is easily discovered, and taken out by means of a small piece of stiff grass, or bit of stick, without hurting the pearl fish. In this practice they are extremely expert. Some of them were discovered whilst I was there, and received their due punishment.

Gmelin asks, if the animal of the *mytilus margaritiferus* is an *ascidia?* This induces me to believe, that it has never yet been accurately described; it does not resemble the *ascidia* of Linnæus, and may, perhaps, form a new genus. It is fastened to the upper and lower shells by two white flat pieces of muscular substance, which are called by Houttuin *ears*, and extend about two inches from the thick part of the body, growing gradually thinner. The extremity of each ear lies loose, and is surrounded by a double brown fringed line. These lie almost the third of an inch from the outer part of the shell, and are continually moved by the animal. Next to these, above and below, are situated two other double fringed moveable substances, like the branchiæ of a fish. These ears and fringes are joined to a cylindrical piece of flesh of the size of a man's thumb, which is harder and of a more muscular nature than the rest of the body. It lies about the center of the shells, and is firmly attached to the middle of each. This, in fact, is that part of the pearl fish which serves to open and shut the shells. Where this column is fastened, we find on the flesh deep impressions, and on the shell various nodes of round or oblong forms, like imperfect pearls. Between this part and the hinge, *cardo*, lies the principal body of the animal, separated from the rest, and shaped like a bag. The mouth is near the hinge of the shell, enveloped in a veil, and has a double flap or lip on each side; from thence we observe the œsophagus descending like a thread to the stomach. Close to the mouth there is a curved browniſh tongue, half an inch in length, with an obtuse point; on the concave side of this descends a furrow, which the animal opens and shuts, and probably uses to convey food to its mouth. Near its middle are two bluish spots, which seem to be the eyes. In a pretty deep hole, near the base of the tongue, lies the beard, *byssus*, fastened by two fleshy roots, and consisting of almost one hundred fibres, each an inch long, of a dark green colour, with a metallic lustre; they are undivided, parallel, and flattened. In general, the beard is more than three quarters of an inch without the cleft, *rima*; but if the animal is disturbed, it contracts it considerably. The top of each of these threads terminates in a circular gland or head, like the stigma of many plants. With this byssus they fasten themselves to rocks, corals, and other solid bodies; by it the young pearl fish cling to

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the old ones, and with it the animal procures its food, by extending and contracting it at pleasure. Small shell-fish, on which they partly live, are often found clinging to the former. The stomach lies close to the root of the beard, and has, on its lower side, a protracted obtuse point. Above the stomach are two small red bodies, like lungs; and from the stomach goes a long channel or gut, which takes a circuit round the muscular column above-mentioned, and ends in the anus, which lies opposite to the mouth, and is covered with a small thin leaf, like a flap. Though the natives pretend to distinguish the sexes by the appearance of the shell, I could not find any genitalia. The large flat ones they call males, and those that are thick, concave, and vaulted, they call females, or *pedoo-chippy*; but, on a close inspection, I could not observe any visible sexual difference.

It is remarkable that some of these animals are as red as blood, and that the inside of the shell has the same colour, with the usual pearly lustre; though my servants found a reddish pearl in an oyster of this colour, yet such an event is very rare. The divers attribute this redness to the sickness of the pearl-fish, though it is most probable that they had it from their first existence. In the shade they will live twenty-four hours after being taken out of the water. This animal is eaten by the lower class of Indians, either fresh in their curries, or cured by drying; in which state they are exported to the coast; though I do not think them by any means palatable.

Within a mother-of-pearl shell I found thirteen *murices nudati*, the largest of which was three quarters of an inch long; but, as many of them were putrid, and the pearl-fish itself dead, I could not ascertain whether they had crept in as enemies, or were drawn in by the animal itself. At any rate turtles and crabs are inimical to the animals, and a small living crab was found in one of them.

The pearls are only in the softer part of the animal, and never in that firm muscular column above-mentioned. We find them in general near the earth, and on both sides of the mouth. The natives entertain the same foolish opinion concerning the formation of the pearl which the ancients did: they suppose them formed from dew-drops in connection with sun-beams. A Brahmen informed me, that it was recorded in one of his Sanscrit books, that the pearls are formed in the month of May at the appearance of the Soatee star (one of their twenty-seven constellations), when the oysters come up to the surface of the water to catch the drops of rain. One of the most celebrated conchologists supposes that the pearl is formed by the oyster in order to defend itself from the attacks of the *pholades* and *boreworms*. But we may be assured that in this supposition he is mistaken; for, although these animals often penetrate the outer layers of the pearl shell, and there occasion hollow nodes, yet, on examination, it will be found that they are never able to pierce the firm layer with which the inside of the shell is lined. How can the pearls be formed as a defence against exterior worms, when, even on shells that contain them, no worm-holes are to be seen? It is, therefore, more probable these worms take up their habitations in the nodes in order to protect themselves from the attacks of an enemy, than that they are capable of preying on an animal so well defended as the pearl-fish is. It is unnecessary to repeat the various opinions and hypotheses of other modern authors; it is much easier to criticise them, than to substitute in their place a more rational theory. That of Reaumur, mentioned in the memoirs of the French Academy

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for 1712, is the moſt probable, viz. that the pearls are formed like bezoars and other ſtones in different animals, and are apparently the effects of a diſeaſe. In ſhort, it is very evident that the pearl is formed by an extravaſation of a glutinous juice, either within the body, or on the ſurface of the animal: the former caſe is the moſt common. Between one and two hundred pearls have been found within one oyſter. Such extravaſations may be cauſed by heterogeneous bodies, ſuch as ſand, coming in with the food, which the animal, to prevent diſagreeable friction, covers with its glutinous matter, and which, as it is ſucceſſively ſecreted, forms many regular lamellæ in the manner of the coats of an onion, or like different ſtrata of bezoars, only much thinner; this is probable, for if we cut through the center of a pearl, we often find a foreign particle, which ought to be conſidered as the nucleus, or primary cauſe of its formation. The looſe pearls may originally have been produced within the body, and, on their increaſe, may have ſeparated and fallen into the cavity of the ſhell. Thoſe compact ones, fixed to the ſhells, ſeem to be produced by ſimilar extravaſation, occaſioned by the friction of ſome roughneſs on the inſide of the ſhell. Theſe and the pearl-like nodes have a different aſpect from the pearls, and are of a darker and bluer colour. In one of the former I found a pretty large, true, oval pearl, of a very clear water; while the node itſelf was of a dark blueiſh colour. The yellow, or gold-coloured pearl, is the moſt eſteemed by the natives; ſome have a bright red luſtre; others are grey, or blackiſh, without any ſhining appearance, and of no value. Sometimes, when the grey lamella of a pearl is taken off, under it is found a beautiful genuine one; but it often happens that, after having ſeparated the firſt coat, you find a worthleſs impure pearl. I tried ſeveral of them, taking one lamella off after another, and found clear and impure by turns; and in an impure pearl I met with one of a clear water, though in the centre of all I found a foreign particle. The largeſt and moſt perfect pearl which I ſaw during my ſtay at Condatchey was about the ſize of a ſmall piſtol bullet, though I have been told ſince my departure many others of the ſame ſize have been found. The ſpotted and irregular ones are ſold cheap, and are chiefly uſed by the native phyſicians as an ingredient in their medicines.

We may judge with greater or leſs probability, by the appearance of the pearl ſhell, whether they contain pearls or not. Thoſe that have a thick calcareous cruſt upon them, to which *ſerpulæ* (ſea tubes), *Tubuli marini irregulariter intorti*, *Criſta-gali Chamar lazuras*, *Lepas tintinabulum*, *Madreporæ*, *Millipore*, *Cellipore*, *Gorgoniæ*, *Spongiæ*, and other zoophytes, are faſtened, have arrived at their full growth, and commonly contain the beſt pearls; but thoſe that appear ſmooth, contain either none, or ſmall ones only.

Were a naturaliſt to make an excurſion for a few months to Manar, the ſmall iſland near Jafna, and the adjacent coaſt, he would diſcover many natural curioſities ſtill buried in obſcurity, or that have never been accurately deſcribed.

Indeed no place in the Eaſt Indies abounds more with rare ſhells than theſe; for there they remain undiſturbed, by being ſheltered from turbulent ſeas, and the fury of the ſurf.

The great ſucceſs of the Rev. Doctor John, in conchology, when at Tutucorin, and aſſiſted by G. Angelbeek, with a boat and divers; and the capital collections made by his agents, whom he afterwards ſent there with the neceſſary inſtruction, and apparatus, may be ſeen in Chemnitz's

Chemnitz's elegant Cabinet of Shells, in 4to. (with illuminated plates); and how many new ſpecies of zoophytes he diſcovered, we learn from another German work by Eſper at Erlangen, the third volume of which is nearly finiſhed.

METHOD OF PREPARING INKS THAT WILL WITHSTAND THE ACTION OF THE OXYGENATED MURIATIC ACID. *By* A. BOSSE, *of Hamburgh.*

FOR illuſtrating the hiſtory of this ſubject, which has been fully treated of in the New Hanoverian Magazine, the following information may be neceſſary: Dr. Lentin, in his paper containing cautions in regard to the miſapplication of the oxygenated muriatic acid, obſerved, that with the help of this acid our common ink could be obliterated without the leaſt injury to the paper which had been written with it, if the paper were firſt drawn through diluted oxygenated muriatic acid; then through diluted ſulphurous acid; and laſtly, through water. At the ſame time he added ſome information which ſeemed to prove that this property had been employed in France ſeveral times to anſwer private purpoſes, and to the prejudice of others. Soon after appeared a paper by Philip Chriſtian Pitel, of Minden, in which he recommended an ink, diſcovered by him, which was indeſtructible, and could be obliterated neither by the oxygenated muriatic acid, nor by any other corroſive ſubſtance. This induced M. Wehrs to examine this ink, and the ſame thing was undertaken by M. Gruner. According to their experiments, this ink, however, was obliterated in the courſe of nine hours by the oxygenated muriatic acid, and alſo by cauſtic pot-aſh; but, at the ſame time, an opinion entirely oppoſite was announced by Dr. Lentin, M. Thorey, and M. Wiegleb, who all, in conſequence of their having employed the ſame teſt, declared the ink to be indeſtructible. Theſe different opinions are, therefore, directly contrary to each other. M. Gruner found that the ink could be deſtroyed by the oxygenated muriatic acid, and by cauſtic alkali: M. Thorey obſerved, that its blackneſs was only leſſened by the oxygenated muriatic acid, and by the vapour of that acid. He found, however, as M. Gruner did, that the cauſtic alkali diſſolved the ink entirely from the paper, but that, like ſeveral acids, it deſtroyed the paper. M. Lentin and Wiegleb deduced from their experiments, thoſe of the former being made with oxygenated muriatic acid, and thoſe of the latter with the ſame, as well as ſeveral other acids, and even cauſtic alkali, that this ink was entirely indeſtructible. Theſe contradictory reſults M. Weſtrumb endeavoured to reſolve in his examination of Pitel's indeſtructible ink, which he found to be only common ink mixed with indigo; and he propoſed the following mixture for an ink which could not be deſtroyed:—Boil 1 oz. of Brazil wood and 3 ozs. of pulveriſed galls with 46 ozs. of water; ſtrain the liquor, which muſt be boiled down to 32 ozs. and pour it, ſtill warm, over 1½ oz. of perfectly pure ſulphate of iron, 1¼ oz. of gum arabic, and ¼ oz. refined ſugar. When theſe ingredients are diſſolved, add from 1 to 1½ oz. good indigo, ground exceedingly fine, and ¾ oz. of purified lamp black.

It is well known that M. Pitel, of Minden, gave the firſt account of a kind of ink which withſtood the oxygenated muriatic acid, at the deſire of Dr. Lentin, who excited the attention of the public to various deceptions practiſed at Paris with common ink by means of the oxygenated

nated muriatic acid. As this ink conſiſted merely of a decoction of logwood and galls with water, in which ſulphate of iron, gum arabic, and ſugar, had been diſſolved, and with which indigo and lamp black had been mixed mechanically, according to the analyſis of M. Weſtrumb, it may be eaſily explained why it exhibited ſuch different appearances when brought to the teſt. M. Gruner, apotheeary in Hanover, was able to obliterate it entirely by the muriatic acid; while, on the other hand, its indeſtructibility by that acid is confirmed by M. Wiegleb and Thorey. Both are in the right: as ſoon as the ink is well ſtirred round, it withſtands this acid; but, if not ſtirred, this acid diſſolves the black oxyd of iron, and the paper in the places wrote upon is reſtored to its priſtine ſtate. Now, though this ink, when ſtirred round, does not entirely fail of its object, this circumſtance, however, may be often forgotten; and this the more readily, as even without ſtirring it has all the blackneſs when uſed of common ink, on account of the oxyd of iron which it contains. Since that time I have made experiments in order to produce an ink which might withſtand the oxy-muriatic acid, and yet contain no iron. I have been able to accompliſh this, as well as the compoſition of ſome other inks which contain iron, though it does not make their chief component parts, but ſerves only to give the ink a black colour. I made experiments alſo with the juice of green plants, according to the proceſs by which M. Murray made an indeſtructible kind of ink from the ſame ſubſtances. Iron muſt not be the chief component part of an ink deſtined to withſtand the muriatic acid, becauſe, in the ſtate of a black oxyd, it is eaſily diſſolved by the acid. But as it acts on vegetable colours only when they are capable of taking up oxygen, and does not deſtroy them, but produces by its action a modification of the colour, they are exceedingly proper for this purpoſe. As none of theſe, however, were found entirely black, I was obliged to employ ſome mineral body which might be black and yet hold a great deal of oxygen. The moſt part of the metallic oxyds, of a black colour, contain very little oxygen, except that of manganeſe, which contains a great deal. I made choice, therefore, of this oxyd, and found, after repeated experiments, that it anſwered the intended purpoſe.

The oxy-muriatic acid diſſolves all metals in a metallic form, as well as metallic calces, combined with a ſmall quantity of oxygen, but not thoſe which contain a great deal, as it has itſelf an exceſs of it. It is therefore capable,

1. Of diſſolving metals in a metallic ſtate, as the metals take up its ſuperfluous oxygen, by which, as is well known, they become ſoluble in acids.

2. Such metallic oxyds as contain little oxygen are capable of abſtracting it from acids, and they then diſſolve in the acids, which then contain leſs oxygen.

The grounds which induced me to employ oxyd of manganeſe for preparing an ink capable of withſtanding the oxy-muriatic acid, were as follows:—

1. Its black colour; 2. its containing a great quantity of oxygen, by which it is inſoluble in the muriatic acid; 3. becauſe it poſſeſſes ſo great an affinity for oxygen, that whenever it has loſt any of its original quantity by being brought to a red heat, or expoſed to the action of acids, it immediately draws it from the atmoſphere, and again becomes black. I ſhall now deſcribe the method of preparing this ink:—Boil

1 oz. of Brazil wood with 12 oz. of water for a quarter of an hour, add ½ oz. of allum: evaporate the whole to 8 ozs. and mix with the liquor 1 oz. of exceedingly ſoft, finely pulveriſed, manganeſe, mixed up with ½ oz. of pulveriſed gum arabic.

Brazil wood alone, by mere boiling, gives an ink not altogether unfit for uſe. Acids, leſs abundant in oxygen, ſuch as the nitrous and muriatic acid, naturally exerciſe an action on this ink; but as theſe change the paper in a perceptible manner, deception is not to be apprehended.

Indigo alſo affords an ink that withſtands the muriatic acid: it therefore makes a chief component part of that prepared by Pitel, but it is mixed in it only mechanically. The following is a preſcription for preparing an ink of the like kind, but in which the indigo is actually diſſolved:

Boil 1 oz. of Brazil wood, and 3 ozs. of coarſely pulveriſed galls, with 9 ozs. of vinegar and as much water, for the ſpace of eight minutes; in the liquor, after being ſtrained, diſſolve 1½ oz. of ſulphat of iron and 1 oz. of gum arabic, and then add to the whole a ſolution of ½ oz. of indigo in 1 oz. of concentrated ſulphuric acid.

The oxy-muriatic acid diſſolves the oxyd of iron in this ink, but the indigo remains undecompoſed. The principal point to be attended to is, that the ink may contain ſuch matters as are not affected by the oxy-muriatic acid: with other ſubſtances leſs deception is to be dreaded.

In the laſt place, I ſhall mention an ink made with the principal ingredients of common ink, but in preparing which, inſtead of the uſual liquids, I employed the expreſſed juice of ſome plant: the fitteſt for this purpoſe I found to be the leaves of the caper ſpurge, *Euphorbia lathyris* Linn.; the common holly, *Sambucus niger*, and common graſs.

STATE OF GENOA.

GENOA is a republican ſtate of Italy; bounded on the north by Piedmont, the Milaneſe, and the Parmeſan; on the eaſt by the ſtates of the Duke of Tuſcany; on the ſouth by the Mediterranean Sea; and on the weſt by the county of Nice: it is about 120 miles in length, but ſcarcely in any part more than 20 in breadth. The country is mountainous, and part of it covered with barren rocks, which ſerve for its defence. Some of the mountains are covered with wood, and ſome yield good paſture. There is but a ſmall quantity of arable land, ſo that the inhabitants are obliged to purchaſe great part of the corn from other countries: however, throughout the year they are ſupplied with excellent legumes and other vegetables for the table. They make a conſiderable quantity of wine, and have abundance of excellent fruit, eſpecially citrons, oranges, pomegranates, almonds, and figs. A great number of mulberry-trees are raiſed to feed ſilk worms; and olives grow in great plenty, eſpecially round the gulph of Spezzia. Salt is produced ſufficient for exportation. The inhabitants are Roman catholics, and ſubmit to the tribunal of the inquiſition. The proteſtants, who dwell in the towns, are not beloved, but are ſuffered by the magiſtrates to dwell in peace. The manufactures are not ſo flouriſhing as they formerly were; the moſt conſiderable are velvet, pluſh, damaſk, different kinds of ſilk, gold and ſilver ſtuffs, lace, gloves, ſtockings, ribbons, ſoap, paper to imitate the Indian, &c. The manufactures are greatly reduced: too great a price being paid for the articles they manufacture, and the inſecurity of their ports, contribute greatly to en-

feeble their commerce. The banking buſineſs in Genoa is very conſiderable, and the bankers are eſteemed the richeſt in Europe. The city of Genoa was formerly the capital of Liguria. It was deſtroyed by the Carthaginians, and re-built by the Romans, whoſe ally it became, and whoſe fortunes it followed.

In the laſt century, the inteſtine diſſenſions about the form of government ſo debilitated the ſtate, that the Genoeſe were obliged to put themſelves ſometimes under the protection of the Dukes of Milan, and ſometimes under the Kings of France: but the latter treated them with intolerable haughtineſs and rigour, till that naval hero, Andrew Doria, in 1528, refcued his country out of the hands of its tyrannical maſters, ſettled it in perfect freedom, and eſtabliſhed its preſent conſtitution. In 1684 it was cruelly bombarded by the French, and, to ſave itſelf from total deſtruction, was obliged to ſubmit to very hard terms; two of which were, that the doge and four counſellors ſhould appear in perſon at Verſailles, and aſk pardon; and that the ſtate ſhould diſarm all gallies except ſix, with a promiſe not to fit out more without the knowledge and conſent of the king. The ancient nobility conſiſt of 28 families, and are thoſe whom Andrew Doria, in 1528, ſeparated from all the reſt, and declared only capable of holding the chief offices, and dignity of doge; all the other inhabitants of Genoa being reduced by him to the claſs of commoners. Since that time it has been found neceſſary to create other nobility, who are allowed to keep manufactures of velvet, ſilk, and cloth; to farm the duties, and to have ſhares in merchant veſſels; but all other buſineſs and handicrafts are forbidden. The form of government is ariſtocratic. The chief is called *doge*, or duke, to which dignity no perſon is promoted till he is fifty years of age, and has for fifteen years left off all trade or occupation not conſiſtent with nobility. Every two years a new doge is choſen; and the former is incapacitated, during five years, to hold again the ſame poſt; however, he has a procurator's office aſſigned him, and a penſion of 500 ſcudi for life. In times of peace, the republic uſually keeps on foot a body of 5000 regular troops; beſides theſe, it has alſo a militia, which, in caſe of neceſſity, is obliged to take the field. The cavalry it raiſes in time of war amounts only to about 600, who are of little ſervice, by reaſon of the badneſs of the horſes. The fleet of the republic, anciently ſo celebrated for its victories over the Saracens, Piſanefe, Venetians, Spaniards, and Turks, and for continuing a conſiderable time maſters of Sardinia, Malta, Majorca, Minorca, Candia, Cyprus, and many other places in and near the Mediterranean and Archipelago, and even the Black Sea, the Crimea, and other places, is now reduced to ſix galleys. The city is about ten miles in circumference, and defended towards the land by a double wall. Several baſtions are erected along the ſea-ſhore, on rocks which riſe above the water. The ſtreets are in general narrow, but clean and well paved; two are filled with magnificent palaces, fronted with marble. It is the ſee of an archbiſhop. The cathedral is built in the Gothic ſtyle, and paved with black and white marble; in the treaſury of which is preſerved a curious hexagon diſh, ſaid to be a ſingle emerald, found at Ceſarea in the time of the cruſades, which the Genoeſe received as their ſhare of the plunder. Beſides the cathedral, it contains thirty-two pariſh churches, many of which are magnificent, and adorned with ſculptures and pictures by the beſt maſters. The doge's palace is large, without decoration, except two ſtatues of John Andrew Doria, and Andrew

Doria,

Doria, larger than life, at the entrance. The arſenal contains arms for 34,000 men, machines, models for bridges, the armour worn by a number of Geneeſe women in the cruſades, a ſhield containing 120 piſtols, made by J. C. Vaeche for the purpoſe of aſſaſſinating the doge and ſenate at one time, &c. They reckon at Genoa 69 convents of men and women, and the number of the inhabitants is eſtimated at 130,000.

Genoa ſurrendered to Vice-admiral Lord Keith and General d'Ott on the 4th of June. The garriſon, 8110 men, are allowed to join the French army; the Auſtrian priſoners taken in the river of Genoa, during the preſent year, are to be given up by way of exchange.

THE BOCHETTA, a chain of mountains, ſituate in the ſtate of Genoa, over which lies the great road from Lombardy to Genoa. On the peak of the higheſt mountain is a narrow paſs, which will hardly admit three men to go abreaſt; and this paſs, which is defended by three forts, is properly called the *Bochetta*, or little mouth. It is the key to Genoa.

SAVONA is the ſecond town, for grandeur and opulence, in the ſtate of Genoa. Its ſtrength conſiſts in two caſtles, but principally in a citadel, of much importance, (which ſurrendered to the Auſtrians on the 15th of May,) ſituated between the port and the city, upon an height, conveniently diſpoſed to defend and protect both the one and the other.

NORTHERN LITERATURE, MAY, 1800.

AFTER an interruption of ſome time, the Royal Norwegian Society have again begun to publiſh their tranſactions, under the title of "Nyeſte Samling af det Kongelike Norſke Videnſkabers Selkabs Skrifter." This volume, beſides a liſt of the members, and an account of Hammer's legacy for promoting the ſciences in Norway, and the confirmation of his Daniſh majeſty, contains various eſſays relating to the arts, manufactures, chemiſtry, natural hiſtory, mathematics, and philology. Among the papers are—On the Northern Rhubarb, and its uſe in dying; Experiments on Potaſh, in order to determine its purity; Deſcription of a rare Acridula, by Dr. Ch. F. Hagerup; Anatomical Deſcription of the Land Tortoiſe, by J. Rathke; Extract from a Meteorological Journal kept for ten years at Egor, &c.

Profeſſor Thunberg, well known by his Voyage to Japan and his Flora Japonica, has undertaken a Natural Hiſtory of the Swediſh Animals. Part of this work has already appeared, and contains the firſt claſs of mammalia. The author, after explaining the properties of theſe animals in general, enumerates the different claſſes of them, according to his maſter Linnæus, and then gives an account of the ſeven orders, into which he divides the mammalia of Sweden. Theſe with webbed feet, among which he does not include the fiſh-otter, he makes a particular order, by which he unites the terreſtrial animals with the whales. Then follows a deſcription of fifty-eight Swediſh ſpecies, according to the Linnæan definition, with the Swediſh names. The author gives an account of the mode of life of theſe animals; their manner of feeding; the uſe they are of, or the hurt they occaſion: the method of breeding thoſe which are domeſticated, and the manner of hunting thoſe which are wild.

A ſecond volume has been publiſhed of Biographical Anecdotes of eminent Swedes, both living and dead. This work is deſtined to pre-

ſerve the memory of men who have diſtinguiſhed themſelves in civil and military affairs, as well as in literature. The moſt complete life is that of Lieutenant-general Sinclair, which contains an account of his campaigns and military works, both printed and in manuſcript; ſuch as his tranſlation of Kevenhuller's Military Maxims; his Military Inſtitutions, in three volumes, printed at Deuxponts in 1773. Among his manuſcripts, the moſt important is, the War of Seven Years in Heſſe, Hanover, and on the Rhine, which forms ſeven volumes quarto.

The author of the above anecdotes has publiſhed alſo a ſelection of letters, forming part of his correſpondence, for above half a century, with more than 150 literary men and others, Swedes as well as foreigners, together with ſome of their anſwers. They relate, in general, to literature and hiſtory; but in particular to thoſe of Sweden.

The fourth part of the Tranſactions of the Royal Academy at Stockholm, for the year 1798, has been publiſhed. The contents are: 1. Obſervations on the Situation and Climate of the City of Umea, in Weſt Bothnia. 2. Extract from a Meteorological Journal, kept at Umea during the laſt half of the year 1796. 3. Extract from a Journal of the like kind, kept at the ſame place, in 1797. 4. Mineralogical Obſervations on Gothland, by W. Helſinger, with a petrographic Chart. 5. Deſcription of the Gymnetrus Grilli, lately diſcovered, and ſo called in honour of that great friend to natural hiſtory, A. U. Grill, by P. C. Lindroth. 6. Dyſphagia Chronica a bulimia orta, by D. Haggſtröm. 7. Deſcription of the Bucco Atro-flavus, a new ſpecies of bird from Sierre Leona, by A. Sparrman. 8. Extract from a Meteorological Diary kept at the Obſervatory of Upſal, in 1798, by D. E. Holmquiſt.

A. D. Riegels has publiſhed, at Copenhagen, a ſmall work, intituled, "Philoſophiæ animalium faſciculus Primus de Erinacco," &c. In the Introduction, the Author gives an Hiſtorical View of the Knowledge which the Ancients had of Zoology, and of the labours undertaken by them on that ſubject. He explains the principles eſtabliſhed by Ariſtotle, and defends that author from ſome reproaches thrown out againſt him by Bacon. He then proceeds to a minute and ingenious deſcription of the hedge-hog, and propoſes to give a ſimilar account of rats, the ſeal, the mole, frogs, and lizards, the ſwine, ſheep, fowls, ducks, and geeſe, owls, crows, dogs, &c. He will point out the different uſes of theſe animals.

A ſmall work has appeared at Copenhagen, intituled, "Forſog til en Skildring af Quindekjönnets lauſlige og borgerlige kaar hos Skandinaverne for Kriſtendommens indforelſe," by L. Engelſtoft—An Eſſay towards a View of the State of the Female Sex among the Scandinavians before the Introduction of Chriſtianity. This eſſay, which gained the prize propoſed by the univerſity of Copenhagen in the year 1796, is now given to the public with conſiderable alterations and additions. From this eſſay it appears that the Scandinavian women poſſeſſed very few and very limited rights: their domeſtic ſtate, however, ſlavery excepted, was not only ſupportable, but, on the whole, comfortable.

The Society of Natural Hiſtory at Copenhagen ſtill continue their labours with zeal and diligence. The ſecond part of the fourth volume of their Tranſactions has appeared, containing nineteen different articles, and illuſtrated with thirteen plates.

M. Kœhler, keeper of the cabinet of engraved ſtones belonging to the Emperor of Ruſſia, has lately publiſhed at Peterſburgh the deſcription of an amethyſt in that cabinet, which formed part of the collection of the late Duke of Orleans, and was purchaſed by Catherine

II.

II. This ſtone, which is one of moſt celebrated monuments of ancient art, exhibits a young man crowned with laurel, having his head covered with a tranſparent veil, which is folded back over the noſe and the cheeks, envelopes the mouth and the lower part of the face, and is afterwards thrown over the ſhoulder. Baudelot de Dairval conſidered this head as that of Shame or Modeſty; M. Galland ſuppoſed it to be that of a Roman emperor, or ſome divinity; the ſame Baudelot de Dairval afterwards wrote a large volume to prove that it was Ptolemy Auletes, and that three round points placed in the field indicated the three modes of muſic. Winckelmann, after refuting the conjectures of Baudelot, pretends that this amethyſt repreſents Hercules in the ſervice of Omphale, queen of Lydia, a country diſtinguiſhed by the effeminacy of its inhabitants. Lachau and Le Blond, rejecting the explanation of Winkelmann, have ranked this ſtone among the number of thoſe the heads of which are unknown. M. Kœhler, however, has explained this maſterpiece of the glyptic art with conſiderable ſucceſs by a little-known point of mythology, which is thus related by Plutarch: Hercules, returning from Troy with ſix veſſels, was ſhipwrecked near the iſland of Cos, then inhabited by the Meropes. Having eſcaped with only one of his veſſels, in which he ſaved his crew and their arms, he landed on the iſland, and meeting a flock of ſheep, he aſked a ram from the ſhepherd, named Antagoras. A violent tumult enſued; and Plutarch ſays, that Hercules, worn out with fatigue, and finding himſelf aſſailed by too great a number of adverſaries, betook himſelf to flight, and retired to the houſe of a Thracian woman, where he remained concealed under a female dreſs. Having afterwards overcome the Meropes, and offered up an expiatory ſacrifice, he married the daughter of Alcionus. Plutarch adds, that in remembrance of this exploit, a ſacrifice was inſtituted in the iſland, in which the prieſt appeared in a female dreſs on the ſpot where the combat took place, and where newly-married women embraced their huſbands, who, on that occaſion, put on women's clothes. It is not Hercules, therefore, at the court of Omphale, but Hercules conqueror of the Meropes, who, according to M. Kœhler, is repreſented on this amethyſt.

J. G. Lipſius has publiſhed a Deſcription of the Gallery of Antiques, at Dreſden, in a quarto volume of 526 pages, with 30 pages of tables, and ten plates. The origin of this gallery is as old as the reign of Auguſtus elector of Saxony, by whoſe order, medals, and other remains of antiquity, were purchaſed in 1560. Under his ſucceſſors, this collection continued to increaſe, till by the munificent exertions of ſeveral ſovereigns it became of the higheſt value and importance. Till the year 1785, the collection lay ſcattered in different pavilions of the large garden, where it was very ill arranged, and in ſuch a ſtate as to be of very little uſe to artiſts. The preſent elector, therefore, aſſigned a place for it in the Japaneſe Palace, and enriched it with ſeveral new and valuable acquiſitions. M. Wacker, the inſpector of this gallery, had made out a deſcription of every thing it contains; but, as he died before it was publiſhed, M. Lipſius made uſe of his manuſcript for the work here announced, and which will be of great utility to artiſts and amateurs, as the ten plates at the end of the volume exhibit plans on which the different articles are indicated by letters correſponding to the deſcriptions.

ACCOUNT

ACCOUNT OF THE IMPROVEMENTS MADE ON HIS MAJESTY'S FARMS IN THE GREAT PARK AT WINDSOR.

By NATHANIEL KENT, *Esq.*

[*From the Tranſactions of the Society for the Encouragement of Arts, Manufactures, and Commerce.*]

THERE having been ſome practices in huſbandry, on his majeſty's farms under my ſuperintendance, in Windſor Great Park, which I conceive are not generally known, and being indulged with his majeſty's gracious permiſſion to ſtate any matter that I may diſcretionally judge proper to communicate, I am induced to lay before the public a few particulars, which ſome gentlemen and farmers, under ſimilar circumſtances, may, perhaps, think deſerving notice.

But, before I enter upon any particular deſcription of what I have to offer, it will not, perhaps, be unintereſting to know the grounds upon which his majeſty's laſt ſyſtem of agriculture has been founded.

In the year 1791, the Great Park at Windſor, about 4000 acres, fell into his majeſty's poſſeſſion. It might truly be called a rough jewel. The whole, as a natural object, was grand and beautiful, of a foreſt appearance; but the parts were crowded and indiſtinct. The ſoil was various, ſome parts clay and loam, and ſome ſharp gravel or poor ſand; a great part of the former was covered with ruſhes and mole-hills, and the latter with fern and moſs.

About 1000 acres of the lighteſt part were ſeparated from the reſt at one extremity, and formed what is called the Norfolk Farm; about 400 acres more, at the other extremity, of a good loamy ſoil, were ſeparated, and called the Flemiſh Farm; both being named from the nature of the huſbandry meant to be adopted upon them.

The reſt (about 2400 acres) remains ſtill in plantations and park; and, though ſo much reduced, yet, from the improvements which have been made upon it, is now capable of carrying more ſtock than the whole 4000 acres did before. All the unſound wet parts have been drained by the Eſſex mode, ſo as to be rendered firm and productive of an improved herbage. The mole-hills have been levelled, chiefly by dragging, and the coarſe and moſſy parts fined by repeated harrowing and rolling; (being one of the firſt improvements upon park land of this deſcription;) beſides which a variety of beauty has been laid open, by clearing the valleys and low parts, to give a bolder effect to the woody ſcenes upon the higher ground, and by making judicious openings, ſo as to break ſtraight lines, and ſeparate parts that were in ſome places too heavy and ſimilar, ſo that the ſame extent of land has now not only a much larger appearance, but exhibits a much greater variety of ground. The truth of this, every impartial perſon who knew the place before his majeſty cauſed theſe improvements to be made, muſt allow. I have only to add, that though prejudice may have taken up an idea, that there has been too great a ſacrifice of timber in effecting theſe improvements, truth will deny it. There has not been a tree taken down, or removed, except on account of decay, or to give room for the growth of others, or to ſet them off to greater advantage in picturesque appearance.

I come now to the object in view, as before hinted, which is to ſtate the motives which I am inclined to think induced his majeſty to adopt the farming ſyſtem upon ſo large a ſcale, and next, to ſhew the reſult.

Theſe,

Theſe, I conceive, were chiefly to create uſeful labour for the induſtrious poor in the neighbourhood, and, by trying experiments in agriculture, to excite imitation where ſucceſs might encourage it.

The Norfolk Farm borders on that extenſive waſte called Bagſhot Heath, hitherto conſidered too barren for cultivation; though large tracts of a ſimilar quality have been long ſince rendered uſeful to the community in the ſouth-weſt part of Norfolk. Arable land, of this deſcription, is generally managed there under a five-courſe ſhift; firſt, wheat; ſecond, turnips; third, barley, with ſeeds, which continue laid two years. But, as the ſeeds turn to very little account after the firſt year, his majeſty's, though a five-courſe ſhift likewiſe, of one hundred acres in a ſhift, is upon a much improved courſe of cropping; as thus:—firſt, wheat or rye; ſecond, the irregular ſhift; third, turnips; fourth, barley or oats; fifth, clover. The irregular ſhift, which is of great uſe on a light farm, may, perhaps, want a little explanation. It is meant to be partly productive, and partly preparative. Forty acres of it are ſown with vetches, to be fed off; forty are ſown the latter end of Auguſt with rye, for early ſeed the next ſpring for the ewes and lambs; the remaining twenty acres are planted with potatoes, and the whole comes round for turnips the next year.

From the advantage of running ſheep in the park, this farm has been brought ſurpriſingly forward, conſidering the ſhort time it has been cultivated; and a great part of it, which produced nothing but heath and moſs, and would have been dear at five ſhillings an acre to rent, now produces more than the original fee-ſimple of the land.

Brevity checks me from going farther into a general deſcription; but the following particulars may deſerve notice.

The comparative advantages of the labour of the horſes and oxen have been, for ſome time, under the conſideration of the public. His majeſty has unqueſtionably tried the latter upon a larger ſcale than any other perſon, as he does not work leſs than 180 oxen upon his different farms, parks, and gardens, and has found them to anſwer ſo well, that there is not now a horſe kept. Upon the two farms and the Great Park, two hundred oxen are kept, including thoſe coming on and going off. Forty are brought in every year, riſing three years, and are kept as ſucceſſion oxen in the park; one hundred and twenty are under work; and forty every year are fatted off, riſing ſeven years.

The working oxen are moſtly divided into teams of ſix; and one of the number is every day reſted, ſo that no ox works more than five days out of the ſeven. This day of eaſe in every week, beſides Sunday, is of great advantage to the animal, as he is found to do better with ordinary keep and moderate labour, than he would do with high keep and harder labour. In ſhort, this is the firſt ſecret to learn concerning him; for an ox will not admit of being kept in condition like a horſe, artificially, by proportionate food to proportionate labour.

Theſe oxen are never allowed any corn, as it would prevent their fatting ſo kindly afterwards. Their food, in ſummer, is only a few vetches, by way of a bait, and the run of coarſe meadows, or what are called leaſows, being rough woody paſtures. In winter they have nothing but cut food, conſiſting of two-thirds hay and one-third wheat ſtraw; and the quantity they eat, in twenty-four hours, is about twenty-four pounds of hay, and twelve of ſtraw; and, on the day of reſt, they range as they like, in the ſtraw-yards; for, it is to be obſerved, they are not confined to hot ſtables, but have open ſheds, under which they

eat

eat their cut provender, and are generally left to their choice to go in and out. Under this management, as four oxen generally plough an acre a-day, and do other work in proportion, there can be no doubt their advantage is very great over horſes, and the reſult to the public highly beneficial.

The oxen, which are brought on in ſucceſſion, run the firſt ſummer in the park, and in the leaſows and temporary ſtraw-yards in the winter; by the term temporary ſtraw-yards, I would have it underſtood that they are made in different places, ſo that the manure which they make may be as near to the ſpot where it is wanted as poſſible.

The forty oxen which go off are ſummered in the beſt paſture, and finiſhed with turnips the enſuing winter. The uſual way has been to draw the turnips, and to give them either ſtalled, or in cribs placed in the yard, with plenty of ſtraw to browſe and lie upon. But laſt winter an experiment was tried which anſwered extremely well, and will be again repeated next winter: this was penning the oxen by day upon the turnip-land, in the manner that ſheep are penned, with this only difference, that the turnips were thrown up into cribs, inſtead of being left to be trodden into the ground; and in the night the oxen were driven into a yard with a temporary ſhed, well littered with ruſhes, fern, and leaves, and turnips and barley ſtraw given them in cribs. They thrived very faſt, and every one of them made, at leaſt, eight loads of good muck in the night-yard, beſides the benefit done in treading and dunging on the land in the day time, which was very great, the ſoil being very light. The reſult of the ox ſyſtem is, that charging the ox for his agiſtment the firſt year, for the value of the graſs and turnips the laſt year, and putting what he has in three intermediate years as an equivalent for his labour, after every allowance for riſk, each ox will pay, at leaſt, twenty per cent. profit. In what inſtance does a horſe produce ſo much?

I do not allow that the ox can be uſed on all ſoils; upon a very ſtony ſoil he cannot: nor can the horſe, in all places, be wholly excluded from huſbandry; but every occupier of a large farm may, at leaſt, uſe ſome oxen to very great advantage. They are all worked at Windſor in collars, as their ſtep is found to be much more free than when coupled together with yokes; and they are found to do their work with much greater eaſe in collars than in yokes, which ought every where to be exploded.

The different kinds of oxen are, in ſome meaſure, ſuited to the ſoil. Upon the Norfolk Farm, which is a light ſoil, the Devonſhire ſort are uſed: upon the Flemiſh Farm, where the ſoil is ſtrong and heavy, the Herefordſhire; and, in the park, where the buſineſs is carting, harrowing, and rolling, the Glamorganſhire. They are all excellent in their different ſtations.

It may not be improper to mention a very ſimple method which has been diſcovered, of firſt training them to the collar: it is nothing more than putting a broad ſtrap round their necks, and faſtening one end of a cord to it, and the other to a large log of wood, and letting the ox draw it about as he feeds in his paſture, for three or four days before he is put into harneſs; by which means he is very much brought forward in docility.

I have before obſerved, that twenty per cent. may be conſidered as the average profit of an ox; ſtating them to be bought in at 10l. and allowing them to ſell for 25l. taking off 10l. for the two years they are

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not worked: but, laſt year, beans being of very little value, they were kept longer than uſual, by being ſtall-fed with bean-meal, which anſwered very well, as they were brought to an average of nearly 30l. and one of them, a Glamorganſhire ox, originally bought for 8l. (and, from his compact round make, always called the little ox,) thrived to ſuch a ſurpriſing degree, that he became too fat to be able to travel to Smithfield, and was, therefore, ſold to Mr. Charlwood, a neighbouring butcher, for 47l.

Next to the advantage obtained from oxen, as much benefit as poſſible has been endeavoured to be derived from ſheep, by means of the fold. Two ewe flocks are kept, of four hundred each. The ſoil, being light and dry, admits of winter folding, (except when the weather is wet) upon the young clover; a practice much to be recommended, as it is productive of a great crop of clover, and prepares the land the enſuing autumn for a crop of wheat, without any farther aſſiſtance. Another excellent practice is, folding upon light land, in dry weather, immediately upon the ſowing of the wheat, which may be put forward, or kept back, a fortnight or three weeks, on that account; and it is not amiſs to have the fold rather large, and to give the ſheep a turn or two round the fold in a morning, before they are ſet out, to tread and ſettle the land, which does a great deal of good, over and above their dung.

A third method of folding has been found to anſwer almoſt beyond deſcription. This was firſt tried in the winter of 1793; but, from an idea of the ſhepherd, that it injured the ſheep, has been ſince diſuſed; but, as there is good reaſon to believe that there was no juſt ground for ſuch an opinion, it is meant to be revived next winter.

A dry ſheltered ſpot is ſelected, and ſods of maiden earth, a foot deep, are laid over the ſpace of a very large fold. It is then bedded thinly with ruſhes, leaves of trees, fern, moſs, ſhort ſtraw, or ſtubble; and, in hard or wet weather, the flock, inſtead of being penned upon the clover in the open fields, is put into this warmer fold, where the uſual quantity of hay is given to them in racks; every night they are ſo penned the fold is freſh littered. When this has been continued, at intervals, during the winter, a layer of lime, chalk, rubble, or aſhes, ſix inches thick, is ſpread over the whole ſurface; and, when it has heated together, about the month of April the whole is turned up, and mixed together, and makes the very beſt manure that can be uſed for turnips.

I have been particular in deſcribing theſe methods of folding, as they are not common in any place, and, in ſome, are entirely unknown; to gentlemen who have parks and large plantations, which afford abundance of leaves, this hint may be the more deſerving attention.

Upon the Norfolk Farm, the land not having been yet marled or clayed, the clover is apt ſometimes to fail; which is alſo the caſe elſewhere, upon the ſame ſort of land. When this happens, his majeſty does, what every other perſon, in a ſimilar ſituation, ſhould do; inſtead of letting the ground remain unproductive, the next year it is ſowed with vetches, which are nearly as valuable as the clover, and wheat always grows remarkably well after them.

As to implements, the Norfolk plough is chiefly what is uſed; and, upon a light ſoil, it is certainly preferable to any other. It ploughs a cleaner furrow, by completely moving the whole body of earth, and inverts it much better than any other plough; and, to eſtabliſh its ſuperiority over the common ploughs of the neighbourhood, I need only add, that, from its conſtruction, it is nearly the draught of an ox eaſier.

There is likewiſe a Norfolk harrow, very uſeful for harrowing what are called bruſh-turnips, or any other turnips, preparatory to their being hoed. I muſt be allowed, likewiſe, to mention the drill-roller, which conſiſts of caſt-iron rings, made at the Norwich foundry, and ſlipped on upon a round piece of wood as an axletree. This is one of the beſt things that has ever been introduced, for the preparation of the land for any ſort of corn, where the ſoil will admit of its being uſed. By the corn being ſo well depoſited, it takes better root; and, at leaſt, one-fourth of the quantity uſually ſown may be ſaved.

The Flemiſh Farm, which I have before mentioned, was ſo named from an intention, at firſt, of carrying on a ſyſtem of huſbandry ſimilar to that practiſed in Flanders, which conſiſts of an alternate crop for man and beaſt; but, the ſoil being ſtrong and coheſive, upon trial it has been found, to anſwer beſt under a four-courſe ſhift, more like ſome parts of Glouceſterſhire, as thus: firſt year, wheat; ſecond, cabbage or clover; third, oats; fourth, beans. The quantity of arable land on this farm is one hundred and ſixty acres, or forty acres in a ſhift. There are two things obſerved upon this farm which may be worth notice: the firſt is, the practice which has for theſe two years paſt been adopted, of taking off the tops of the beans juſt as the bloſſom is ſet; this not only improves the quality, but increaſes the quantity, and cauſes them to ripen ſooner, which is a conſiderable advantage, by giving time to get the ſucceeding crop of wheat in, perhaps a fortnight earlier. The other is, that of ſowing clover early in the ſpring, among twenty acres of one-half of the wheat, and bruſh harrowing and rolling it in. This has produced a very fair crop of clover the next year; and the other half, after the wheat, is winter and ſpring-fallowed, and planted with cabbage. There is a double advantage reſulting from this; that one-half of this ſhift, ſo managed, becomes a ſummer crop, and the other half a winter crop; and, by obſerving the next year to change the parts, by ſowing the clover where the cabbage was before, the clover and cabbage do not come round upon the ſame ground except once in eight years.

Cabbage has been tried ſeveral years; but his majeſty's huſbandmen never got into the right management of it till this year; but the crop is now remarkably fine.

It will not be improper to mention, that the drum-headed cabbage is the beſt ſort; that the ſeed ſhould be ſown in Auguſt; the plants firſt ſet out in November, and tranſplanted for good in July. The next thing to be noted is their application: they are certainly inferior to turnips for fatting, but ſuperior in the increaſe of milk, either of cows or ewes, and, therefore, they are particularly good where there is a dairy, or a breeding flock of ſheep. I truſt his majeſty will, the next yeaning ſeaſon, try an experiment of which I have high expectation, which is, to ſlice or quarter the cabbages, and feed the ewes with them, upon ſuch of the meadows as want manuring; this, I flatter myſelf, will be of ineſtimable ſervice to the ewes and lambs, and be the means of increaſing the next year's crop of hay conſiderably.

The true light of viewing theſe improvements is, to conſider them as a ſort of new creation to the public: for, as it is a fact not to be controverted, that the reduced number of acres in the park, from their improved ſtate, ſupport as many deer and other cattle as the whole did before, the produce obtained from the farms is all clear gain. The crop of wheat and rye, from the one hundred and forty acres ſown, upon the moſt moderate calculation, may be ſet at three thouſand three hundred

dred and ſixty buſhels; and, allowing ſix buſhels to a human mouth, this gives a yearly proviſion in bread for five hundred and ſixty people; to ſay nothing of the fatting-off of forty oxen; the breed of eight hundred ſheep; and the growth of, at leaſt, five thouſand buſhels of oats and beans; all of which, it muſt be obſerved, goes in aid of the public market, as the work is done by oxen entirely.

OF THE TRADE-WINDS AND MONSOONS.

[*Illuſtrated by an elegant Frontiſpiece to this Volume.*]

THERE are many parts of the world where the winds, that with us are ſo uncertain, pay their ſtated viſits. In ſome places, the winds are found to blow one way by day, another by night; in others, for one-half the year, they go in a direction contrary to their former courſe: but, what is more extraordinary, there are ſome places where the winds never change, but for ever blow the ſame way. This is particularly found to obtain between the tropics in the Atlantic ocean and great Pacific ſea. Between the limits of 60 degrees, namely, from 30° of north latitude to 30° of ſouth latitude, there is a conſtantly eaſterly wind throughout the year, blowing on the Atlantic and Pacific oceans; and this is called the *trade-wind*.

The trade-winds near the northern limits blow between the north and the eaſt; and, near the ſouthern limits, they blow between the ſouth and the eaſt. Theſe general motions of the wind are diſturbed on the continent, and near the coaſts. Beyond the northern limit of the general wind, on the Atlantic ocean, the weſterly winds prevail, but not with any certainty of continuance. In the Atlantic ocean, the S. E. trade-wind extends as far as three degrees north; and the N. E. trade-wind ceaſes at the fifth degree N. In the intermediate ſpace are found calms with rain, and irregular uncertain ſqualls, attended with thunder and lightning: but this ſpace is ſhifted farther to the northward or ſouthward, according as the ſun's declination is more northerly or ſoutherly.

In the Indian ocean there are periodical winds, called *monſoons*, that is, ſuch as blow ſix months in one direction, and the other ſix months in an oppoſite direction; the change of their direction, which is near the autumnal and vernal equinoxes, is always accompanied with violent ſtorms of wind, thunder, and lightning.

On or near the coaſt of Guinea the winds blow almoſt always from the weſt and ſouth-weſt points. Between the Cape Verd and the eaſternmoſt of the Cape Verd iſlands, there is a tract of ſea, which is a perpetual calm with reſpect to wind; but the thunder and lightening there is terrible. The varieties and deviations both in general and particular winds are far from being known; we cannot, therefore, expect any theory that will ſolve them all; there are difficulties which perplex every hypotheſis that has hitherto been ſuggeſted, and that cannot be cleared up at preſent.

The beſt account we have of the trade-winds is that of Mr. Dalton, namely, that as the heat is always greateſt in the torrid zone, and decreaſes in proceeding northward and ſouthward, with reſpect to theſe, the poles may be always conſidered as centers of cold; ſo that, abſtracting from accidental circumſtances, there muſt be a conſtant aſcent of air over the torrid zone, which afterwards falls northward or ſouthward, whilſt the colder air below is determined by a conſtant impulſe

towards the equator. In general, where the heat is greateſt, the heated air will aſcend, and a ſupply of colder air will be received from the neighbouring parts.

The following effects may be attributed to the diurnal motion of the earth; the air over any part thereof, when calm, will have the ſame rotatory velocity as that part; but if a quantity of air in the northern hemiſphere receive an impulſe in the direction of the meridian, either northward or ſouthward, its rotatory velocity will be greater in the former, and leſs in the latter, caſe, than that of the air into which it moves; conſequently, if it move northward, it will have a greater velocity eaſtward than the air, or ſurface of the earth over which it moves, and will, therefore, become a S. W. wind, or a wind between the ſouth and the weſt; and, *vice verſa*, if it move ſouthward, it becomes a N. E. wind. Likewiſe, in the ſouthern hemiſphere it will appear, the winds, upon ſimilar ſuppoſitions, will be N. W. and S. E. reſpectively.

From this view of the air, Mr. Dalton attempts to explain the trade-winds; he conſiders two general maſſes of air, as proceeding from both hemiſpheres towards the equator; theſe, as they advance, are conſtantly deflected more and more towards the eaſt, on account of the earth's rotatory motion. That from the northern hemiſphere, originally a north wind, is made to veer more and more towards the eaſt; and, that from the ſouthern hemiſphere is made to veer from the ſouth towards the eaſt: theſe two maſſes, meeting in the torrid zone, their north and ſouth velocities deſtroy each other, and they proceed, with their common velocity, from eaſt to weſt, round the torrid zone. The equator is not the center of the concourſe, but the northern parallel of 4°, becauſe the center of heat is at that place, the ſun being longer on the north ſide of the equator than on the ſouth ſide. Though all the parts of the atmoſphere ſeem to conſpire in producing regular winds round the torrid zone, yet, from the ſituation of the land, or other cauſes, ſtriking irregularities are produced, as is evident from the monſoons, ſea and land breezes, &c. theſe are deviations from the general rule, but this will ever be more or leſs the caſe with all human theories.

To explain the monſoons, it is neceſſary to attend to the circumſtances that are peculiar to the Indian ocean, and which are not found in the Atlantic and Pacific oceans. They ſeem to be theſe: that the Indian ocean is bounded to the northward by ſhores, whoſe latitude does not exceed the limits of the general trade-wind; and that the general trade-wind falls, on what ſailors term lee-ſhores, to the weſtward.

The ſun being twice a-year vertical in the equator, and never departing thence more than 23½ degrees, cauſes the air in that climate to be hotter than at any other place in the ocean: ſuch a rarefied ſpace muſt extend acroſs the Indian ocean, and produce a S. E. wind to the ſouthward, and a N. E. wind to the northward, of the equator, over which, in the upper regions of the air, the winds return in the contrary direction. This we accordingly ſee happen in the months of October, November, December, January, February, and March. But when the ſun declines to the northward, and heats the land there, the air contiguous to thoſe lands is rarefied, and the lower air has a tendency to move that way: this tendency increaſes as the ſun advances further north, ſo that the whole body of the lower air, to the northward of the equator, moves towards the northern lands, no withſtanding the equatorial rarefaction. It ſeems, then, that the body of the lower air in the northern part of the Indian ocean is determined, as to its courſe, by the greater rarefaction.

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If the rarefaction, at the ſurface of the land, be greater than that at the equator, the wind blows to the north; and, the contrary happens when the equatorial rarefaction is the greateſt. Thus it appears, that it is the ſituation of the lands, and their effects in heating and rarefying the atmoſphere, which are the principal cauſes of the monſoons. Still, however, it muſt be owned, that the explanation is imperfect, and the obſervations we poſſeſs too few to form a theory. In the commencement of the monſoons, to uſe the ſeamen's phraſe, they creep along the ſhore; they then ſpread into the ocean: at firſt they are feeble; they afterward become violent and frightful; they then gradually diminiſh, and finally come to a change; and this twice in a year, agreeable to our ſolar progreſs.

The ſun is the undoubted cauſe of the ſea and land breezes, which are wiſely appointed by Divine Providence to make ſome of the hotter climates habitable. The ſea breezes in the Weſt Indies begin to appear about nine o'clock in the morning, in a fine black curl upon the water, approaching the ſhore; it increaſes gradually till noon, and dies away at four or five in the afternoon. About ſix in the evening it changes to a land breeze, which blows from the land to the ſea, and laſts till eight in the morning. There is an interval in the morning and evening, between the changing of the breezes, when the wind is ſtationary, like the water before turning of the tide; and theſe intervals are the hotteſt parts of the day.

The breezes are thus accounted for: when the ſun is up, his heat takes more effect on the land than on the water, ſo that the heat is accumulated, and the air over the land is rarefied; and, as it mounts upward, the colder air from the ſea comes in to keep up the equilibrium. In the evening the dews are ſo exceſſive, and the cold ſo ſudden, on the land, from the quick deſcent of the ſun below the horizon, that the water, in the night, is warmer than the land; and the air of the ſea, being then moſt rarefied, the draught of air is contrary to what it was in the day.

In the northern temperate zone the winds are variable, but the moſt general are the S. W. and W. and the N. E. and E. In the northern temperate and frigid zones, the winds are more tempeſtuous in winter than in ſummer. In our climates, a tempeſt is but rarely known, and its ravages are regiſtered as an uncommon calamity; but, in the countries that lie between the tropics, and for a good ſpace beyond them, its viſits are frequent, and its effects anticipated. In theſe regions the winds vary their terrors, ſometimes involving all things in a ſuffocating heat; ſometimes mixing all the elements of fire, air, water, earth, together; ſometimes, with a momentary ſwiftneſs, paſſing over the face of the country, and deſtroying all things in their paſſage; and ſometimes raiſing whole ſandy deſerts in one country, to depoſit them in another. We have, therefore, very little reaſon to envy thoſe climates the luxuriance of their ſoil, or the brightneſs of their ſkies. Our own cloudy atmoſphere, that wrapts us round in obſcurity, though it fails to gild our proſpects with ſunſhine, or our groves with fruitage, nevertheleſs anſwers the calls of induſtry; the labourer toils in the certain expectation of a moderate but happy return.

The rains in the Weſt Indies are by no means the things they are with us. Our heavieſt rains are but dews comparatively: they are rather floods of water, poured from the clouds with a prodigious impetuoſity; the rivers riſe in a moment; new rivers and lakes are formed, and,

and, in a ſhort time, all the low countries are under water. It is in the rainy ſeaſon, principally in the month of Auguſt, that they are aſſaulted by hurricanes, which deſtroy, at a ſtroke, the labours of many years, and proſtrate the moſt exalted hopes of the planter, and that often when he thinks himſelf out of the reach of fortune. It is a ſudden and violent ſtorm of wind, rain, thunder, and lightning, attended with a furious ſwelling of the ſeas, and ſometimes with an earthquake; in ſhort, with every circumſtance, which the elements can aſſemble, that is terrible and deſtructive. Firſt they ſee, as a prelude to the enſuing havock, whole fields of ſugar-canes whirled into the air, and ſcattered over the face of the country. The ſtrongeſt trees of the foreſt are torn up by the roots, and driven about like ſtubble; their wind-mills are ſwept away in a moment; their works, the fixtures, the ponderous copper-boilers and ſtills, of ſeveral hundred weight, are wrenched from the ground, and battered to pieces; their houſes are no protection; their roofs are torn off at one blaſt, whilſt the rain, which, in an hour, riſes five feet, ruſhes in upon them with irreſiſtible violence.

There are ſigns by which the Indians of theſe iſlands taught our planters to prognoſticate the approach of an hurricane. The hurricane comes on either in the quarter or at the full change of the moon. If it comes on at the full, then at the preceding change the ſky is troubled, the ſun more red than uſual; there is a dead calm below, and the mountain tops are free from thoſe miſts which uſually hover about them. In the caverns of the earth, and in wells, you hear a hollow rumbling ſound, like the ruſhing of a great wind. At night the ſtars ſeem much larger than uſual, and ſurrounded with a ſort of burs; the north-weſt ſky has a black and menacing appearance; the ſea emits a ſtrong ſmell, and riſes into vaſt waves, often without any wind. The wind itſelf now forſakes its uſual ſteady eaſterly ſtream, and ſhifts about to the weſt, from whence it ſometimes, with intermiſſions, blows violently and irregularly about two hours at a time. They have the ſame ſigns at the full moon; the moon herſelf is ſurrounded with a great bur, and ſometimes the ſun has the ſame appearance.

The nature of the ſoil, over which the wind blows, has a great effect upon the quality of the air: the vaſt ſandy deſerts of Africa and Arabia give a burning heat and blaſting quality to the air that paſſes over them. Theſe horrid regions lie to the ſouthward and eaſtward of the Mediterranean; and hence it is that travellers, who have had the opportunity of making the compariſon, tell us, that the air of the Weſt-India iſlands is nothing to the hot ſuffocating winds which blow in the night at Minorca and Gibraltar, for theſe latter are ſcarcely ſupportable by the human frame. At Goree, in the river Senegal, there is an eaſterly wind from the inland parts, with which thoſe who are ſuddenly met by it in the face are ſcorched up as by a blaſt from a furnace.

An extraordinary blaſting wind is felt occaſionally at Falkland Iſlands. Happily its duration is ſhort; it ſeldom continues above twenty-four hours. It cuts the herbage down as if fires had been made under them; the leaves are parched up, and crumble into duſt; fowls are ſeized with cramps, ſo as never to recover; men are oppreſſed with a ſtopped perſpiration, heavineſs at the breaſt, and ſore throat, but recover with care.

But, beyond all others, in its dreadful effects, is the *ſamiel*, or mortifying wind, of the deſerts near Bagdad. The camels, either by inſtinct or experience, have notice of its approach, and are ſo well aware of it, that they are ſaid to make an unuſual noiſe, and cover up their noſes in

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the ſand. To eſcape its effects, travellers throw themſelves as cloſe as poſſible to the ground, and wait till it has paſſed by, which is commonly in a few minutes. As ſoon as they who have life dare to riſe again, they examine how it fares with their companions, by plucking at their arms or legs; for, if they are deſtroyed by the wind, their limbs are abſolutely mortified, and will come aſunder. It is ſaid of this wind, that if it happens to meet with a ſhower of rain in its courſe, and blows acroſs it, it is at once deprived of its noxious quality, and becomes mild and innocent. It is alſo ſaid, that it was never known to paſs the walls of a city.

The following picture of the ſetting in of the monſoons is given by Dr. Moſely, and will readily account for the neceſſity of Lord Cornwallis's haſty return to Bangalore, on the failure of his firſt attempt upon Seringapatam. "The ruin and deſolation accompanying theſe hurricanes, ſays Dr. Moſely, cannot be deſcribed. Like fire, its reſiſtleſs force conſumes every thing in its track, in the moſt terrible and rapid manner. It is generally preceded by an awful ſtillneſs of the elements, and a cl ſeneſs and miſtineſs in the atmoſphere, which makes the ſun appear red, and the ſtars large. But a dreadful reverſe ſucceed—the ſky is ſuddenly overcaſt and wild—the ſea riſes at once from a profound calm into mountains—the wind rages and roars like the noiſe of cannon—the rain deſcends in deluges—a diſmal obſcurity envelopes the earth with darkneſs—the ſuperior regions appear rent with lightning and thunder—the earth often does, and always ſeems, to tremble—terror and conſternation diſtract all nature—birds are carried from the woods into the ocean—and thoſe whoſe element is the ſea ſeek for refuge on land—the frightened animals in the field aſſemble together, and are almoſt ſuffocated by the impetuoſity of the wind in ſearching for ſhelter; which, when found, ſerves them only for deſtruction—the roofs of houſes are carried to vaſt diſtances from the walls, which are beat to the ground, burying their inhabitants under them—large trees are torn up by the roots, and huge branches ſhivered off, and driven through the air in every direction, with immenſe velocity—every tree and ſhrub, that withſtands the ſhock, is ſtripped of its boughs and foliage—plants and graſs are laid flat on the earth—luxuriant ſpring is changed, in a moment, to dreary winter.—This direful tragedy ended, when it happens in a town, the devaſtation is ſurveyed with accumulated horror: the harbour is covered with wrecks of boats and veſſels; and the ſhore has not a veſtige of its former ſtate remaining. Mounds of rubbiſh and rafters in one place, heaps of earth and trunks of trees in another, deep gullies from torrents of water, and the dead and dying bodies of men, women, and children, half buried, and ſcattered about, where ſtreets but a few hours before were, preſent the miſerable ſurvivors with a ſhocking concluſion of a ſpectacle to be followed by famine, and, when accompanied by an earthquake, by mortal diſeaſes."

DESCRIPTION OF THE ISLAND OF CELEBES OR MACASSAR.

THE iſland of Celebes, called alſo Macaſſar, is of great importance to the Dutch for the ſpice trade, on account of its ſituation, as it has, on the north, the Philippines; on the weſt, the Sunda iſles; on the eaſt, the Moluccas; and, on the ſouth, Timor and Java. It extends from the third degree of north to the fifth of ſouth latitude, and lies nearly under the 136th degree of longitude. It is about a

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hundred and twenty miles in length from north to south, and forty-five in breadth from east to west. Raynal says, its diameter amounts to about a hundred and thirty miles, by which, in all probability, he understood its length from north to south. Properly, the eastern side of the island is called Celebes, and the western Macassar; but, in general, the former name is given to the whole island, particularly by the Dutch.

As this island lies under the line, the air is exceedingly hot; but the heat is moderated by frequent rains and cooling breezes; and, in most places, the air is not prejudicial to the health of the inhabitants. It abounds with mountains, but the soil, taken in general, is fertile. Rice, cocoa-nut-trees, mangoes, bananas, melons, and oranges, grow here exceedingly well, and are cultivated in abundance, together with the cotton-shrub, *uba*, and *batta*. There are here also plenty of horses, oxen, buffaloes, deer, wild swine, and birds of all kinds, and, in particular, a variety of beautiful parrots. Abundance of fish are caught on the sea-coasts, as well as in the rivers and lakes.

The Dutch carry hither opium, spirits, lack, coarse and fine cloths, &c. and receive, in exchange, rice, wax, slaves, and gold. Here, as well as in many parts on the coast of Africa, the unfortunate beings doomed to slavery are not prisoners taken in war, or criminals, but people, in general, who have been kidnapped, for the purpose of being sold; and it often happens, that relations do not hesitate, for the sake of gain, to deprive their fellow-creatures of liberty, the greatest blessing which mankind enjoy in the present life. The island is well peopled: on the coast of Celebes alone, there are said to be fifty-six thousand inhabitants, seventeen thousand of whom are capable of bearing arms.

In this island there is a multitude of small kingdoms and states, the greater part of which, however, depend on the two great kingdoms of Macassar and Bony. The king of Ternate, also, has extensive possessions, which occupy almost the whole of the northern and eastern part of Celebes. The two most powerful kings, whom the Dutch, by the preponderance of their arms, obtained as allies, are the kings of Macassar and Bony. The kings of Tello and Sandrabony are in alliance with the king of Macassar; and those of Soping, Luhu, and Tanette, with that of Bony. Some small states, such as Wadjo, Mandhaar, &c. are independent. Though the kings of Macassar and Bony are allies of the Dutch, they are always sworn enemies to each other; and this is not unfavourable to the policy of the Dutch, who, in their Indian possessions, still keep in view the maxim *divide et impera*, and who derive great advantage from the discord of the eastern princes.

The kingdom of Macassar or Goath lies on the western side of the island, of which it occupies the greater part. The king of Goath, and that of Tello, both bear the title of Macassar, though each has a distinct kingdom: they assume the title of Goath and Tello from their places of residence. According to an ancient tradition, the Macassars, like many other nations, deduce the origin of their princes immediately from the gods. Once, they say, after the death of the first sovereign of the kingdom, a beautiful female descended from heaven, suspended by a gold chain. This celestial beauty, named Tumanurong-a, was immediately chosen by the Macassars to be their queen. She afterwards married a king of Bonthain, and, after being pregnant three years, brought forth a wonderful child, capable of speaking and walking

ing as ſoon as it was born, but exceeding ugly and deformed. This young prince was named Tuma-Salingabeerang. When he attained to manhood, he broke the golden chain which his mother had brought with her from heaven, and the mother and her huſband inſtantly diſappeared, and left to their ſon the kingdom, together with one-half of the chain. This chain, which, it is aſſerted, was ſometimes light, and ſometimes heavy, and ſometimes appeared of a pale colour, was long preſerved, as a valuable part of the regalia of the crown, until it was loſt, with various other rarities, during the warlike commotions which took place in this kingdom about the middle of the preſent century. This Tuma-Salingabeerang is conſidered as the chief of the family of all the kings of Goach.

The Dutch were involved in violent diſputes with theſe ſovereigns before they were able to eſtabliſh themſelves in their kingdom. In the year 1778, Goach, the capital, was taken by ſtorm, and deſtroyed; and, in 1781, the preſent king, Punduca Siri, ſultan Abdal Hadja, was placed on the throne by the government of Batavia. The king of Goach does not enjoy unlimited power, but is ſubject to certain laws, which he is obliged ſtrictly to obſerve. He can undertake no meaſure of importance without the conſent of his council, nor can he inflict arbitrary puniſhment on criminals, who muſt be puniſhed according to the laws. He has a privy-council called *tonklalangs*, and every village is under the direction of a particular governor, diſtinguiſhed by the title of *galarang*.

The Portugueſe viſited this iſland about the beginning of the ſixteenth century, and obtained from the ſovereign then on the throne permiſſion to form an eſtabliſhment. The ſucceſſors of this prince introduced the weights and meaſures now in uſe, fixed the prices of merchandize, manufactured gunpowder, and planted the firſt cannon on the walls of Goach. He gave permiſſion alſo to the Malays not only to reſide in his kingdom, but to erect a Mahometan temple. This religion made ſuch progreſs here, that, about the year 1583, deputies were ſent to Mecca, to bring from thence a hadja, or prieſt, to inſtruct the Macaſſars in the doctrine of Mahometaniſm, which, in 1603, was eſtabliſhed throughout the whole kingdom under the ſultan Allahudier.

The kingdom of Bony, which lies on the weſtern ſide of a bay, called, on that account, the Bay of Bony, is the ſecond kingdom, in point of importance, in the iſland. It is in cloſe alliance with the two ſmall kingdoms of Soping and Luhu. The natives of Bony, that they may not appear inferior to the Macaſſars, deduce their origin, in the like manner, from the gods. The firſt king, they ſay, deſcended from heaven, and was known by the name of Matta-Solompo-e, that is, the all-ſeeing. This ſovereign, after reigning forty years, reſigned the kingdom to his ſon, and, with his wife, aſcended again to heaven; but, notwithſtanding this common deſcent of their rulers from the race of the gods, the Macaſſars and people of Bony are ſworn enemies, and their inceſſant quarrels greatly contributed to enable the Dutch, who, according as their intereſt required, favoured ſometimes the one party, and ſometimes the other, to make themſelves maſters of the iſland. At preſent, the Bougineſe, or people of Bony, are the moſt powerful, as the Macaſſars were about a century ago.

The Bougineſe are of a middle ſtature, and have a brown complexion, but not dark. Among the female ſex, in particular, ſome are found almoſt entirely fair. Their features, in general, are agreeable, only

that the nose is a little flatted. The Macassars, on the other hand, are of a large stature, have a manly warlike appearance, are of a more open disposition, and, at the same time, detest treachery; while their opponents, the Bougineſe, never attack openly, but endeavour to fall upon their enemies by surprise. Those even who never did them an injury are not secure from being murdered by them when they can do it with privacy; and they often commit such actions for no other reason, as they say, than to try the goodness of their daggers. Many Macassars, as well as Europeans, have fallen a sacrifice to this thirst for blood. Their daggers and assagays are, for the most part, poisoned, as well as their small darts, which they can shoot at their enemies to a considerable distance by blowing them through a tube.

Their clothing consists of a piece of blue or red cotton cloth wrapped round the body, and drawn through between the legs. The upper part of the body is quite naked. On the head they wear a piece of cotton-cloth in the form of a handkerchief, with which they cover their hair, which is as black as pitch, and exceedingly long. On the other parts of the body, neither the men nor the women suffer any hair to grow; they pull it out by the roots, in the same manner as the Mahometans and Indians, as soon as it appears. They feed, for the most part, on rice, fish, and pisangs; and their beverage is water, though they are not destitute of *saguer*, or palm-wine. The Bougineſe women are, in general, much handsomer than those of the other Indian tribes: some of them, had their complexion the same mixture of red and white as our females, would be accounted beauties in Europe. They are naturally of an amorous disposition, and are capable of undertaking any thing to gratify their inclinations.

The Mahometan religion, which has here become general, permits the Bougineſe to have four lawful wives, provided the husband can maintain them. If the parties, however, are not satisfied with each other, they may separate with as little trouble as they were united. Their funerals are attended with very little ceremony. The body is wrapped up in a piece of white cotton cloth, and deposited in the grave, over which some sweet-scented flowers are strewed, and two stones are erected, one at the head, and another at the feet. The Bougineſe have a sort of game at cards, which, in all probability, they learned from the Portugueſe. It has a great similarity to that called *tarocco*, though the twenty-two tarocks are not among their cards. The four colours are called *spada*, *datudyens caso stokke*, *copas-cousel*, and *boelang-rosy*.

As the Dutch readily saw the importance of this island, particularly in regard to their spice trade, they did every thing in their power to form a settlement in it, and even at an annual expence, which considerably exceeded the income arising from their trade: the abbé Raynal makes it to be 165,000 livres. The castle of Rotterdam, which is the principal residence of their East-India company in the kingdom of Macassar, lies in the latitude of 5° 7′ south, and the longitude of 136° 50′. It was constructed by the Portugueſe, with the assistance of the Macassars, and was afterwards beautified by the Dutch, who increased its fortifications. Some years ago, a neat church was erected here, capable of containing two hundred persons. The walls of the fortress, which are strong, and of considerable height, are built entirely of stone hewn from the rock. On coming out by the land-gate, you arrive at a large plain, on the north side of which lies the village of Maardingen, where the principal part of the Europeans reside. The streets,

ſtreets, which are broad, and ornamented with beautiful buildings, interſect each other, at right angles, in the direction of the four points of the compaſs. At the end of one of them is a large edifice, ſet apart for an orphan-houſe. The Chineſe all live together in one ſtreet, called, for that reaſon, the Chineſe-ſtreet. Blaardingen is ſurrounded with paliſades, and is furniſhed with gates, which are ſhut in the night-time. Without the paliſades, towards the ſouth, there is a row of buildings, one of which is the habitation of the governor, and, at a little diſtance, there are ſome places called *campongs*, inhabited by natives and Europeans.

The road of Macaſſar is one of the moſt beautiful in India, and, at the ſame time, ſafe for ſhips at every ſeaſon of the year. The diſtrict around it is exceedingly pleaſant. It conſiſts of a large plain, ſeveral miles in extent, in which, as far as the eye can reach, nothing is to be ſeen but rice-fields and meadows, watered by ſmall ſtreams. The picturesque appearance of this ſcene is heightened by groves and ſcattered clumps of ſhady trees, loaded with fruit. Towards the eaſt, it is bounded by lofty mountains, called the mountains of Bonthain, which divide this part of Celebes, towards the weſt, from Bony, and, towards the ſouth, from the gulph of Tomini, into two parts.

The ſeaſons are here the ſame as in Java. The ſouth-eaſt monſoon continues from May till November, and is called the favourable monſoon: the north-weſt, called the bad monſoon, continues from November till May. During the former, the ſky is ſerene, and the weather dry; but continual winds and violent rain prevail during the latter. It is very ſingular, that, on the eaſt ſide of the before-mentioned mountains of Bonthain, the contrary takes place: for, when fine weather in the ſouth-eaſt monſoon prevails on the weſt ſide of the mountains, there is nothing but hurricanes and rain on the eaſt ſide; ſo that the boundaries of ſummer and winter are only a few miles diſtant from each other. The principal productions here are rice and cotton. The rice, however, is inferior in quality to that of Java, but the cotton is the beſt in India.

The Dutch Eaſt-India company poſſeſs the caſtle of Rotterdam, called in the language of the country Adjong Pandang, together with the ſurrounding diſtrict, in conſequence of a treaty which they entered into with the prince of Celebes. But, as the boundaries of their poſſeſſions were, perhaps, not accurately defined, the company always endeavoured to enlarge, and the Macaſſars, on the other hand, to confine, them. The company poſſeſs alſo a peninſula, extending from this place towards the north, and a large flat diſtrict, which, on account of its fertility, is conſidered as the granary of Celebes, together with ſeveral places lying between this plain and the mountains, and likewiſe a great many villages among the mountains. Theſe places border on each other, and are bounded on the weſt by the ſea, on the north by the kingdoms of Tanette and Maros, on the eaſt by Tamari, and on the ſouth by the kingdom of Macaſſar. The inhabitants of them, after various revolts, were, at laſt, reduced to complete obedience in 1728.

I ſhall omit ſaying any thing of the other ſmall kingdoms in the iſland of Celebes, and proceed to a deſcription of its gold mines, and the method in which the gold is collected. Mining and the art of metallurgy are conducted in a very careleſs manner in India; which is owing partly to the ignorance of the natives, and partly to their indo-

lence. In general, it needs excite little ſurpriſe that people, who live in a mild climate, and who have few wants, ſhould be little inclined to penetrate into the bowels of the earth to procure metals, which are immediately extorted from them by the avaricious Europeans, or of which they are, in a great meaſure, deprived by their own princes. If an Indian here and there be compelled by force or neceſſity to dig for or collect gold, he never goes to work with ſufficient intelligence and activity, but contents himſelf with what he can procure to ſatisfy his wants in the eaſieſt and ſpeedieſt manner. This is exactly the caſe with the Indians who inhabit thoſe parts of Celebes which produce gold.

They obtain that metal by collecting the ſmall particles which have been carried down by the ſtreams, or by waſhing the ſand which they dig up, rather than by working the mines in a regular manner. The auriferous mines in the iſland of Celebes commence on the ſouthern ſide of Bulang, and the northern ſide of Kotta-Buna, or Mogondo, and proceed thence to Dondo on the ſouth-weſt, and Tamperana on the north-weſt ſide, at the Bay of Tomini. Every where between theſe two diſtricts gold is found in a greater or leſs quantity. Where the land of Celebes becomes ſo narrow, and the mountains ſo low, that a perſon can with eaſe paſs from the one coaſt to the other in a few hours, the auriferous mountains end; and on the whole coaſt on the other ſide, as far as Macaſſar, a ſingle gold mine is not to be found

Beſides the mines already diſcovered, a great many others would, no doubt, be found, were there a ſufficiency of labourers; for the villages in theſe auriferous mountains are exceedingly ill-peopled. Another cauſe of theſe treaſures being ſo much neglected is the ignorant ſuperſtition of the natives. They never will venture to dig in any place where they ſuſpect great riches to be concealed, until they have ſent thither a diviner, as he is called, to find out whether their labours will be attended with ſucceſs. The whole art of theſe diviners, called in the language of the country *talanga*, conſiſts in their diſcovering, as they pretend, by the voice of a certain bird, whether abundance of gold is to be found in a certain place; whether the labourers will be attacked by ſickneſs; whether there are in it many ſpirits to impede the labourers, and conceal the gold from them, with other things of the like kind. If the bird gives a favourable anſwer to all theſe queſtions, the diviner muſt endeavour to ſecure the favour of the protecting ſpirits of the place by offerings of various kinds; after which a few workmen may begin digging, and continue their labour as many days or months as the bird has preſcribed. If the bird, however, gives an unfavourable anſwer to only one queſtion, no perſon will venture, in ſuch a place, to dig a hole of only a few inches in depth. Many rich mines remain, therefore, unexplored, becauſe the prophetic bird, or the *talanga*, is not in good humour.

When the workmen have arrived at the place where, according to the permiſſion of the *taranga*, they may dig up gold, they hold ſerious counſel with the bird once more, and aſk it in what particular ſpot they muſt begin. When this is done, they firſt conduct water to the ſpot; for, without water, they cannot proceed, as, by its means, they waſh away the earth and clay from the pit, that the ſtones and fine ſand, among which the gold is contained, may remain pure. If the ſituation of the ground will not admit of the water being conducted in furrows, they make a kind of gutters of hollow *wakka*-trees, which

they

they ſupport with props. When they have brought the water to the place where the mine is to be worked, they make a pit of twenty, thirty, or forty, feet in circumference, according to the number of workmen: ſometimes there are eight, and ſometimes ten or twelve. As long as the water has room to run off, they ſuffer it to carry with it the earth, which they keep continually turning and ſtirring in the pit; but, when the pit becomes ſo deep that there is no paſſage for the water, they muſt bale it out till they arrive at the ſtones. Theſe they waſh clean, and build them up regularly around the ſides of the pit, but without lime or mortar, to prevent the earth from falling in. When the pit is carried to a very great depth, they ſecure theſe ſtones by means of boards and beams of wood. Theſe poor miners find ſometimes ſtones of from three to four and five hundred weight, which they are obliged to raiſe and remove from the pit without any other machines than a common wooden lever.

When all the earth, clay, dirt, and ſtones, have been thrown from the pit, and a kind of black ſand begins to appear, they are then ſure that they ſhall find gold. This ſand they take up in a kind of ſmall ſhovels made for the purpoſe; and, having placed themſelves in the water, they put one handful of the ſand after another on ſmall round wooden diſhes named *dulangs*. Theſe *dulangs* are about eighteen inches in diameter, and ſomewhat hollow, and have a ſmall cavity in the middle, which can be cloſed with a wooden cover. When all the ſand has been waſhed from the *dulang*, by being continually ſtirred round with the hand, the gold, which is much heavier, remains in the above-mentioned cavity. When it can receive no more, they take the gold which has been collected, and hold it over the fire in a cocoa-nut-ſhell till it is dry; after which they blow away the remaining ſand as well as they can, and preſerve the pure gold.

When they dig a hill or mountain which is ſituated cloſe to a river, they employ another method to obtain the gold. In this caſe, they make a pit at the edge of the river, conduct into it as much water as they have occaſion for, throw into it the earth they have dug up, and waſh it till nothing remains but the black ſand mixed with gold; after which they waſh it in their *dulangs*, as already deſcribed. This is the eaſieſt method of procuring gold, provided it can be employed. They have, however, a third method; but it can be uſed only in mines newly diſcovered. They go into the river, with a baſket on their back, and a piece of iron reſembling a thick chiſel, which has a wooden handle, and ſearch the fiſſures and crevices of the rocks, where they ſometimes find lumps of gold equal, in weight, to two or three rials. In other reſpects, the art of digging for gold is the ſame in all the mines, and among all the people, on this coaſt. The only difference is in regard to the depth of the pits. In many places, it is ſcarcely neceſſary to go deeper than ten or twelve feet; but, in others, the pits muſt be carried to the depth of ſeveral fathoms, and the ſides muſt be ſupported by means of boards and beams. The inſtruments uſed in theſe mines conſiſt only of a piece of iron about a foot and a half long, and two inches in thickneſs: it is pointed and ſharp at the one extremity, and, at the other, is furniſhed with a ſocket, into which is ſtuck a wooden pole about ſix feet in length. Thoſe who are able to procure it, have alſo an iron hook, with a ſhort wooden handle, which they employ for looſening and turning up the earth around the ſtones. A mattock, with the above-mentioned *dulangs*, which each miner makes

makes for himſelf, and a pair of gold ſcales, form all the reſt of their apparatus.

When a gold mine is diſcovered, the workmen do not immediately begin to dig it, but firſt ſearch the neareſt river, in which they turn up the ſtones, and drain off a part of the water. After they have turned up the ſand, to about the depth of a foot, they ſometimes find large pieces of gold, which, in all probability, have been waſhed down by the ſtreams from the mountains. It has been remarked, that the rocks on the borders of rivers, and even the greater part of the ſtones which are taken up from pits where the ore is rich, have a blue, and ſometimes yellow, colour, and are ſo ſoft that they may be uſed as paint. Where the gold is leſs rich, the ſtones are grey or white, and either of a hard texture, or ſoft like limeſtone. By theſe ſigns, the produce in gold of any mine may be eaſily aſcertained.

In all the gold mines, but particularly thoſe which lie at a diſtance from the ſhore, it is exceedingly cold before ſun-riſe, and after ſun-ſet. On this account, the poor miners ſuffer a great deal. As they are obliged to ſit in the water from morning to night, their bodies, when they ceaſe from their labour, are almoſt rendered quite white by the ſaltpetre. When the mines are worked, the water of the river near which they are ſituated, is muddy, and of a reddiſh-yellow colour, down to its mouth; and thoſe who are ſo imprudent as to drink of it are ſeized with a dangerous dyſentery.

The labour of the miners is not always attended with the ſame ſucceſs; for it ſometimes happens, that they work a month and longer, during which they ſpend ſeveral dollars, without finding gold of the value of one. In that caſe, they are obliged to dig in ſome other place, and to renew their labour. In newly-diſcovered mines, they are, for the moſt part, ſucceſsful; but, in mines that have been worked for ſome time, they are often obliged to labour a whole month before they can obtain any gold. The quantity and value of the gold which is found in any mine cannot be accurately aſcertained. One workman, alſo, is often more fortunate than another. In newly-diſcovered mines, there are labourers who, ſometimes, in the courſe of fourteen days, find to the value of two hundred dollars; whereas, in other places, the value of twenty dollars is ſcarcely found in the courſe of a year.

In the wide-extended gold mines of the river Palella, which divides itſelf into ſeveral branches, there are places where gold is exceedingly abundant; but in ſuch places it is of leſs value, being ſcarcely eighteen carats fine. The beſt gold comes from the mines of Popajatu, Moliſpat, Ankahulu, Tolodinki, Lembuno, Sonſſo, and Tamperana; alſo from the ſouth and ſouth-weſt ſide of Pogiama, Wongo, Tomellas Bevool, and Tontoly. The gold procured from all theſe mines is, for the moſt part, above twenty carats fine. Frederick Dühr, a ſervant of the Dutch Eaſt-India company, who viſited theſe mines a few years ago, is the only perſon who has given an authentic account of them. Thoſe who travelled through theſe diſtricts before him, never ſaw the gold mines, but only viſited the habitations of the chief civil-officers, which are at a conſiderable diſtance from the places where the gold is dug; and the chief men among the natives are too indolent to undertake journeys along theſe difficult and dangerous roads which conduct to the mines, and in which people are often in danger of breaking their necks.

Within the extent of the gold mines of Ankahulu, there is a place called

called Longi, which produces a kind of gold that, in fineneſs, exceeds even that of Popajatu and Ankahulu. This place, however, is little frequented, becauſe the ſmall river, near which it is ſituated, is not navigable, and the inhabitants are obliged to carry their proviſions on their backs along a difficult and dangerous road. Beſides, the miners often find, in this place, a great deal of copper, which, when they have no acid to put it to the teſt, often deceives them, as they, at firſt, take it to be gold. This is the only mine on the north or north-weſt ſide where copper is found. Near Bevool, on the ſouth or ſouth-weſt ſide, there is another where good copper is dug up in duſt, which is as fine as the fineſt gold-duſt. In the mines of Bombula, Batodulang, Ankahulu, and Palella, a great deal of rock-chryſtal is found, and likewiſe a kind of iron ore.

In almoſt all the mines which the before-mentioned Mr. Dühr viſited, he obſerved, that the workmen, when they had dug to the depth of five, and, in ſome places, of twelve, feet, came to a horizontal ſtratum of rock, which, with their inſtruments, they were not able to penetrate. They, however, frequently told him, that they firmly believed that they ſhould find gold below theſe rocks, if they could break through them. He ſaw, alſo, at Ankahulu, where a ſtratum of ſuch rock is found, at the depth of from twelve to fifteen feet, that there were fiſſures in it, two or three inches wide, which contained a blackiſh ſubſtance, almoſt like ruſt of iron, mixed with a great many pieces of gold, and which the workmen, after they waſhed the rock perfectly clean, dug out, to as great a depth as they could, with their tools. In all the mines of Celebes, the gold, when ſeparated from the ſand, is of conſiderable fineneſs. At Pogiama and Palella alone, gold ore is found, here and there, mixed among other ſtones; but it is not rich; and the gold muſt be extracted by pounding the ſtone, which is not very hard.

PREPARATION OF WRITING-INK.

HAVING been brought up in a line of buſineſs in which I am in the daily habit of obſerving the action of ſuch ſubſtances upon each other as enter into the formation of ink, it may readily be imagined, that, in a practical point of view, my opportunities for the improvement of it have fallen little ſhort of any individual whatever. If to this I add, that, ſince the year 1794, I have annually ſupplied the public with, at leaſt, 17,000 gallons of ink, beſides preparing powder for its occaſional production, it may be inferred, that I have ſpared no pains in ſtudying what would beſt conduce to its perfectability; and after the many attempts which I have made, I have never found my expectation, or that of my friends, deceived, when the proceſs has been conducted agreeably to the following directions:—In ſix quarts (beer meaſure) of water, (it does not appear of importance whether it be rain, river, or ſpring, water,) boil four ounces of the beſt Campeachy logwood, chipped very thin acroſs the grain; (the boiling may be continued for near an hour;) adding, from time to time, a little boiling water, to compenſate for waſte by evaporation: ſtrain the liquor whilſt hot, ſuffer it to cool, and make up the quantity equal to five quarts by the further addition of cold water. To this cold decoction put one pound, averdupois weight, of blue galls, or 20 ozs. of the beſt galls in ſorts, which ſhould be firſt coarſely bruiſed; 4 ozs. of ſulphat of iron, calcined

calcined to whiteneſs; ½ oz. of the acetite of copper, which ſhould be triturated in a mortar, moiſtened by a little of the decoction, gradually added, till it be brought to the form of a ſmooth paſte, and then thoroughly intermixed with the whole maſs. Three ounces of coarſe brown ſugar, and ſix ounces of good gum Senegal, or Arabic, are alſo to be added. Theſe ſeveral ingredients may be introduced, one after the other, immediately, contrary to the advice of ſome, who recommend the gum, &c. to be added when the ink is nearly made; as gum, however, is, at preſent, exorbitantly dear, three or four ounces will be found ſufficient, with only one and an half ounce of ſugar, unleſs, for particular purpoſes, it is wanted to bear a higher gloſs than common. In regard to the uſe of ſugar, which I have here recommended, I hope I ſhall not treſpaſs in remarking, that my obſervations, on a very extenſive ſcale, are coincident with thoſe of M. Ribancourt, who ſays, that a degree of fluidity is, by its means, imparted, which allows the doſe of gum to be enlarged conſiderably beyond what it would bear without it; and it is thereby rendered leſs liable to clog the pen, which, eſpecially when the nib is very fine, if it does not flow freely, quits it ſo ſlow as unpleaſantly to retard the writer, and is totally unfit for fine manuſcripts; beſides, by ſuch an union of gum and ſugar, a degree of conſiſtency is given to the liquor, which enables it to ſuſpend a much greater portion of colouring matter than otherwiſe could be effected; a circumſtance of the greateſt importance to its hue and permanency. It is far from my deſign, in thus tranſmitting my ideas, to induce a ſuppoſition, that it is exactly after this manner that I, or any other perſon who ſupplies ink by wholeſale, compound it; ſo far from it, that the firſt coſt of one gallon, on the plan here ſuggeſted, would exceed twice the ſum which is uſually paid for it to the manufacturer, although, by retail, it is diſpoſed of at an enormous rate. For private perſons, therefore, who with to be particular in their manuſcripts, the rule I have here laid down will be found fully to anſwer their expectations at a cheaper rate than they are, in general, furniſhed with it. The beſt veſſel, in my opinion, in which to make ink, is a common ſtone bottle, which will contain half as much more as is propoſed to be made, and which ſhould be agitated twice a day, and be left uncorked, in order to expoſe freſh ſurfaces of the liquor to the action of the air, without which it cannot be expected to write very black when firſt uſed, but, with this precaution, may be fit for uſe in about fourteen days; when it may be poured from its dregs, and corked up, to preſerve it from duſt, as well as waſte by evaporation. In cold weather it ſhould never be ſuffered to freeze, which is found to cauſe a diſunion of its parts, nor does it ever afterwards recover its former intenſity of colour, luſtre, or durability. Many perſons, I am aware, diſapprove, and therefore omit, the uſe of logwood, from an apprehenſion that it induces a tendency in the ink to fade; this, however, from the ſtricteſt attention, I can aſſert to be fallacious, at leaſt where it is not had recourſe to by way of ſubſtitute for the other more expenſive articles; indeed, its effects are quite the reverſe, where all the ingredients are properly proportioned. As to the beautiful complexion which is given by it to the entire maſs of fluid, it would be needleſs to inſiſt, unleſs for the ſake of thoſe who are unacquainted how a mixture of the acetite of copper and logwood-liquor work together, and by which, in this inſtance, a richneſs and bloom is given, which can in no other way be got with equal œconomy and ſucceſs; independent

of

of which, the colouring matter of the wood, by its affinity with the oxyde of iron, has a very powerful effect to blacken the ink, and to render it less capable of change from any unsaturated acid in the sulphat of iron, or from the operation of the air. I am aware, too, that the introduction of cupreous matter has been objected to, on the score of its injuring the penknife, by a portion of copper attaching itself thereto, in consequence of superior elective attraction, whereby it has been remarked, that a part of the knife's edge is dissolved, and a quantity of copper answering thereto is exchanged and deposited in its place, which is always said to happen when the pen retains a little ink at the time of its being mended. This, I think, is spinning out the effect of chemical affinity too far; for although, with respect to the reasoning, the truth must be admitted, I contend, notwithstanding, that its consequences to the edge are not apparent to the eye; nor is any sensible detrimental change thereby produced upon the knife, more than what is induced by any other ink into which neither the sulphat or the acetite of copper is introduced. As to myself, however, I have never yet seen a receipt for the formation of ink, where each of the principles were so completely proportioned and saturated with each other as to be inert when applied to the surface of a piece of polished metal, such as iron for example; nay, even the frequent contact of water only, if allowed to remain, would spoil any instrument made of that material. I shall not enlarge on this particular, conceiving the most powerful objection I can offer, in opposition to that opinion, is, that I have now lying by me a penknife, which has been in constant use between two and three years, and which even yet retains almost as good an edge as it had at first, by the mere assistance of an unprepared leather strap, although in the ink with which I write the acetite of copper has always been used. But even admitting, for argument's sake, that what I have attempted to disprove is true, how many hundred pens might be made and mended 'ere it would be requisite to bestow twopence to the cutler for the exercise of his art? In short, if the introduction of the substance alluded to into ink be a fault, I consider it as one of no consequence when put in competition with the advantages of beauty, durability, and intensity of colour, imparted by it.

I shall intrude no longer on the time or patience of your readers, than by requesting, if any of them are possessed of a cheap and efficacious method whereby the mouldiness of ink may be prevented, that they will communicate the same through the medium of your Magazine, in doing which a very considerable service will be rendered towards its perfectability. The admixture either of a small quantity of the muriate of soda, of the nitrate of pot-ash, of alcohol, or of cloves, have been severally recommended for this purpose; but, by experience, I know that of these only alcohol will avail, and this cannot be added in sufficient quantity without causing it to sink into, and spread upon, the paper; so that, indeed, *its* use is altogether interdicted. The best plan which I have hitherto found, as a preventive to the vegetative process I here allude to, is, to add the ingredients of which the ink is composed to the *cold* decoction: if recourse be had to boiling ALL *together*, it is found very rapidly to promote the inconvenience; and, were ebullition totally avoided, it would, on that account, be better, but then we could not obtain the ink of so deep a colour; yet, I know of no circumstance in which mouldiness will not appear in time, and that in no inconsiderable degree. In fine, I am ignorant of any substance, or method, that has

been hitherto uſed as a ſpecific to remedy the defect. If there is any that can be ſuggeſted, I ſhould be happy to put it to the teſt of experiment.

L. D. Jun.

ON THE VOLCANIC ISLAND NEAR ICELAND.

By Captain VON LÖWENÖRN, *of the Daniſh Navy.*

IN the ſpring of 1783, a volcanic iſland, thrown up in the neighbourhood of Iceland, excited no little attention. According to the account of the ſea-captain who firſt ſaw it, exactly at the time when it firſt aroſe, ſmoke and flame ſeemed to riſe from the ſea, but no land or iſland was to be ſeen. It needs excite no wonder, therefore, that the obſerver was thrown into the greateſt conſternation, as he ſays himſelf, when he beheld the ſea on fire! He and the whole crew, therefore, concluded that the end of the world had arrived, and they all began to prepare themſelves for the awful moment: but, as they heard no trumpet, and as the ſun ſhone in the firmament with his uſual brightneſs, after conſidering what the phenomenon might be, they at laſt concluded that Iceland had been ſwallowed up by an earthquake; that this was a remainder of it; and that the flames aroſe from Hecla, the well-known volcano of that iſland. Full of this idea, they were juſt on the point of returning, in order to convey intelligence of this event to Denmark; but, very luckily, they ſoon after diſcovered the coaſt of Iceland.

The place where this volcanic eruption was ſeen lies o 'y 7¾ nautical miles, fifteen to a degree, from the ſouth-weſt extremity of Iceland. Hitherto they had ſeen no land, but, recogniſing Iceland, the ſhip reached the place of deſtination, and completed her voyage. Other ſhips, which arrived later, ſaw a ſmall iſland from which the eruption had ariſen; but it always exhibited, as might naturally be expected, a different appearance. The ſame year ſmoke and flames were ſeen to ariſe from the neareſt part of the oppoſite coaſt of Iceland.

As there have been many inſtances of ſuch eruptions from the ſea producing iſlands, this event attracted the notice of government, and the year following orders were given to the ſhips bound to Iceland to examine the new iſland; but it had entirely diſappeared, ſo that no traces of it were to be found. Towards the concluſion of the year, however, an unfortunate accident happened, which, without doubt, was occaſioned by ſunken rocks forming a part of the iſland which had diſappeared.

A Daniſh ſhip, of 64 guns, called the *Inſödſretten*, was expected from the Eaſt Indies, and intelligence had already been received that ſhe had ſailed from the Cape of Good Hope; but after that period no farther account was heard of her till the year 1785, when ſome veſſels, returning from Iceland, reported, that ſome fragments of this ſhip, together with the long-boat, had been driven aſhore on the coaſt of that iſland. According to every account, and by comparing the different circumſtances, it appears to me certain, that the above ſhip was wrecked on theſe rocks, then no longer viſible above the ſurface of the ſea. It is impoſſible that ſuch a large boat could have been conveyed from a ſhip without the hands of men, unleſs the ſhip had been daſhed to pieces. This boat was not only driven to land entire, and in good condition, though without any perſon in it, but there was found in it a box filled with wax candles. At the diſtance of about a quarter of a mile from the boat there were found various pieces of the ſame ſhip, which could be eaſily known by ſome diſtinguiſhing marks. Theſe parts, of different forms

forms and ſizes, would not have been thrown on ſhore ſo near each other if the misfortune had happened at a greater diſtance; the billows, currents, &c. would certainly have driven them on ſhore at places more remote from each other. Beſides, theſe fragments were driven on ſhore by a wind which blew in a direction from theſe rocks, and nothing elſe of this misfortune had been perceived on the coaſt.

From all theſe circumſtances I conclude, that this veſſel had experienced a very bad voyage home from the Cape of Good Hope, for that year eaſterly winds were exceedingly prevalent in the northern ſeas. A great many ſhips, and particularly men of war, preferring going round Great Britain to the paſſage through the Channel. It is probable that the ſhip in queſtion may have been in want of ſome neceſſary, ſuch, perhaps, as freſh water. The captain, beſides, was well acquainted in Iceland, where I myſelf was with him, ſome years ago, as lieutenant on-board a ſhip which he then commanded, and, on this account, he probably intended to run into ſome of its harbours, but unfortunately ſtruck on the ſunken rocks, the remains of the volcanic iſland. In this diſtreſſed ſituation the crew, no doubt, had recourſe to the only probable means left for ſaving their lives, by hoiſting out their long-boat, and while employed in this labour the ſhip, it is likely, went to pieces, and the people were loſt, as none of them were ever ſeen or heard of.

During my expedition to Iceland, in the year 1786, I made it my buſineſs to make ſome reſearches in regard to this volcanic iſland, though at that time no ſuſpicion was entertained that the above ſhip had been wrecked in this place; for this conjecture was only a conſequence drawn from my reſearches.

When I arrived in Iceland, where, on account of the buſineſs entruſted to my charge, as well as on account of the obſervations which I was obliged to make for the improvement of charts, I found it neceſſary to remain ſome time with my ſhip in Halmens-haſen, and had at my diſpoſal a ſmall veſſel which was lying there, I ordered Lieutenant, now Captain, Grove, to cruiſe about with this ſmall veſſel in the neighbourhood of the place where the volcanic iſland had been ſeen. He remained there ſome days, and, though he often ſounded with a line of more than a hundred fathoms, found no bottom, ſo that he loſt all hope of making any diſcovery; but, juſt when he was about to return, he obſerved, contrary to all expectation, that the waves broke over ſome rocks lying exactly level with the ſurface of the water. As he now entertained no doubt that he had found what he had been ſent in queſt of, he took the bearings and diſtances from the neareſt part of the coaſt of Iceland, and tranſmitted to me an account of his obſervations.

When the buſineſs of the expedition was ended, and I was about to return, at the end of the ſummer, I reſolved to viſit this intereſting point myſelf, and to aſcertain its real poſition by actual obſervation. I took my departure, therefore, from ſome ſmall iſlands, or rocks, which lie before Cape Reikianös, the ſouth-weſt extremity of Iceland, and the outermoſt of which is called the Grenadier's Cap, diſtant $3\frac{3}{4}$ miles ſouth-weſt from the Cape. As the weather was exceedingly favourable, I was ſo fortunate as to obtain its latitude by the meridian altitude of the ſun, and its longitude by a timekeeper. Though the timekeepers which I carried with me were not of the beſt kind, as I had quitted the ſame day one of the ports of Iceland, where I obſerved their rate of going, their relative errors could not be of great importance. I

determined, therefore, the position of the rock called the Grenadier's Cap at 63° 43′ 40″ north latitude, and 25° 35′ 40″ west longitude, from the meridian of Paris. This agreed pretty nearly with the observations of Ve dun de la Crenne, Borda, and Pingré; especially as I have good reason to believe, that, from a want of sufficient knowledge of the coast of this country, they placed Cape Reikianös three minutes too far north, as they make the latitude to be 63° 55′. As I found also, by the most accurate observations that could be made at sea, that these dangerous rocks lie 47° in a direction south-west from the true meridian, and just four miles from the before-mentioned Grenadier's Cap, the position of these rocks will be 63° 32′ 45″ north latitude, and 20° 2′ 50″ west longitude, from the meridian of Paris.

As I now proceeded to get a sight of these rocks, Captain Grove, who was on-board my ship, concluded, from his former observations, that we could be at no great distance from them, having now quite lost sight of the Icelandic coast; and the before-mentioned rocks, which lie to the south-west from Iceland, though the weather was clear, being now scarcely discernible. My companion, therefore, asked whether it was prudent to advance so straight upon it. While we were talking on this subject, the people called out, and immediately every eye was directed to the spot, where we saw before us the waves breaking over a rock. We immediately put about ship, and heaved the lead, which was in readiness, and found the depth twenty-six, and soon after forty, fathoms, but a little farther no ground was to be found with a line of a hundred fathoms. Some tallow had been put into the bottom of the lead, as usual, to enable us to determine the nature of the bottom by the substances which adhered to it. By these means we obtained small fragments of stone which were entirely lava, or of a volcanic nature. The rock is not large, and the water around it is exceedingly deep. Its height is exactly equal to that of the surface of the sea, or rather a little lower; and, for that reason, it cannot be seen till one approaches very near to it, or when the waves break over it.

The origin of the volcanic island, which was seen in this place in the year 1783, I explain in the following manner:—The rock which now remains formed the crater, which at that period threw up flames and smoke. The large quantity of lava which issued from it, being accumulated on the bottom of the sea around the crater, may, at length, have been raised above the surface of the sea, and even to a considerable height. But, as this volcano lies in a part of the ocean where prodigious billows prevail, and roll over each other throughout a wide extent of sea, it is probable that such a structure would soon be destroyed by their violence, especially as there is a great depth of water around it, in which it might easily be overturned. It is known also, that the same year, a considerable quantity of pumice-stone, and volcanic substances of the like kind, the specific gravity of which was lighter than that of water, was cast on shore in Iceland, and found floating on the sea, by mariners.

Had the eruption taken place in a calmer sea, and the depth around it been less abrupt, the thrown up mass would have consolidated itself by its own weight, and would have in time become an island; of which we have had instances in the Archipelago, in the East Indies, and different parts of the ocean. Had it taken place on the continent, or in an island, it would have formed a mountain. It is not necessary that a volcano should always arise from a mountain; volcanoes have been seen to burst forth

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in plains; but the invariable conſequence is, that the volcanic matter, by being accumulated, and, as it were, piled up, forms a mountain. Now, as the violence of the waves may have eaſily waſhed away the looſe matter accumulated round the crater, there is no abſurdity in ſuppoſing, that, a the billows rolled over the mouth of the crater, the fire was at length overcome by the water, and the volcano extinguiſhed.

The crater, conſiſting of rock, has remained. It is well aſcertained that a rock exiſted in this place before the eruption; and, it is confirmed, by late obſervations, that it exiſts ſtill. An obſcure notion prevailed among the ſeamen, who frequented Iceland, that there was a blind rock in this neighbourhood, called *Fugle-Skiör* (Bird's rock). This name I have retained in my charts, though the exiſtence of it is denied by many ſeamen, becauſe they paſſed without ſeeing it. But, under ſuch circumſtances, the teſtimony of one who has ſeen it is of more weight than an hundred who deny its exiſtence becauſe they did not ſee it. This confirms me in the opinion, that the crater had exiſted long before in the ſame ſtate.

To conclude, it may not be ſuperfluous to remark, in order to ſtrengthen this opinion, that, nearly in the ſame direction from the ſouth-weſt extremity of Iceland, as already mentioned, there are five ſmall iſlands or rocks, the outermoſt of which lies at the diſtance of 3½ miles from Cape Reikianös. Between theſe the water is deep: ſhips which go to, or come from, the weſt ſide of Iceland, commonly paſs through them, when they firſt get ſight of the land and rocks. By the Daniſh ſeamen they are called *Fugle Skiöe*, becauſe they are frequented by a great number of ſea-fowl; but by the inhabitants they are called *Eld Eyarne*, (Fire iſlands.) May not this afford reaſon to conjecture, that in former times they had volcanic eruptions, and the volcano which appeared in 1783 may probably have exiſted long before?

ACCOUNT OF THE EARTHQUAKE WHICH TOOK PLACE IN PERU IN THE YEAR 1797. *By* M. CAVANILLES.

THERE are reckoned to be more than ſixteen volcanoes in the kingdom of Quito, which are in a continual ſtate of eruption, and which throw up thick vapours, often mixed with flames, either from their craters or through their lateral fiſſures. In the midſt of the moſt profound calm there is frequently heard a dreadful bellowing noiſe, the forerunner of earthquakes, to which this part of the world is often expoſed. After the year 1791, this noiſe was frequently heard in the neighbourhood of the mountain of Tunguragua. Antonio Pineda and Née, the two naturaliſts employed in the expedition round the world, when examining the declivity of this volcano, the lava of which had been hardened more by the internal fire than by the ardour of the ſun, were ſtruck with terror by the horrible ſound which they heard, and the heat which they experienced. Pineda, that valuable member of ſociety, whoſe premature death is ſtill deplored by the friends of ſcience, foretold that a terrible eruption was preparing in the mountain of Tunguragua; and his conjectures were confirmed by the event. On the 4th of February, 1797, at three quarters paſt ſeven in the morning, the ſummit of the volcano was more free from vapours than uſual; the interior part of the mountain was agitated by frequent ſhocks, and the adjacent chains burſt in ſuch a manner, that, in the ſpace of four minutes, an immenſe tract of country was convulſed by an undulating movement.

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Never did hiſtory relate the effects of an earthquake ſo extraordinary, and never did any phenomenon of nature produce more misfortunes, or deſtroy a greater number of human beings. A number of towns and villages were deſtroyed in a moment: ſome of them, ſuch as Riobamba, Quero, Pelilee, Palate, Pillaro, were buried under the ruins of the neighbouring mountains; and others, in the juriſdictions of Hambata, Laracunga, Guaranda, Riobamba, and Alauſi, were entirely overthrown. Some ſuſtained prodigious loſs by the gulphs which were formed, and by the reflux of rivers intercepted in their courſe by mounds of earth; and others, though in part ſaved, were in ſuch a ſhattered ſtate, as to threaten their total ruin. The number of perſons who periſhed, during the firſt and ſucceeding ſhocks, are eſtimated at 16,000. At ten o'clock in the morning, and four in the afternoon, the ſame day, (February 4,) after a dreadful noiſe, the earth was again agitated with great violence, and it did not ceaſe to ſhake, though faintly, for the whole month of February and March; but, at three quarters paſt two in the morning of the 8th of April, the villages already ruined were again expoſed to ſuch violent ſhocks as would have been ſufficient to deſtroy them. This extraordinary phenomenon was felt throughout the extent of 140 leagues from eaſt to weſt, from the ſea as far as the river Napo; and without doubt farther, for we are little acquainted with theſe diſtricts, which are inhabited by the ſavages. The diſtance north-eaſt and ſouth-weſt, between Popajan and Piura, is reckoned to be 170 leagues; but, in the centre of that diſtrict, 1 degree 16·6′ from theſe places, is ſituated the part totally deſtroyed, and which comprehends forty leagues from north to ſouth between Guarandam and Machache, and twenty leagues from eaſt to weſt. But, as if an earthquake alone had not been ſufficient to ruin this fertile and populous country, another misfortune, hitherto unknown, was added. The earth opened, and formed immenſe gulphs; the ſummits of the mountains tumbled down into the valleys, and, from the fiſſures in their ſides there iſſued an immenſe quantity of fetid water, which in a little time filled up valleys a thouſand feet in depth, and ſix hundred in breadth. It covered the villages, buildings, and inhabitants; choaked up the ſources of the pureſt ſprings, and, being condenſed by deſiccation, in the courſe of a few days, into an earthy and hard paſte, it intercepted the courſe of rivers, made them flow backwards for the ſpace of eighty-ſeven days, and converted whole diſtricts of dry land into lakes. Very extraordinary phenomena, which will doubtleſs be one day mentioned in hiſtory, occurred during theſe earthquakes; I ſhall, however, content myſelf with mentioning only two of them. At the ſame moment that the earth ſhook, the lake of Quirotoa, near the village of Inſiloc, in the juriſdiction of Lacatunga, took fire, and the vapour which roſe from it ſuffocated the cattle and flocks that were feeding in the neighbourhood. Near the village of Pelilee, a large mountain named Moya, which was overturned in an inſtant, threw out a prodigious ſtream of the before-mentioned thick fetid matter, which deſtroyed and covered the miſerable remains of that city. Naturaliſts will one day find, in theſe ravaged countries, objects worthy of their reſearches. Fragments of the minerals and earths of Tunguragua are about to be tranſported to Spain: but it is not in ſuch fragments that we ought to ſearch for the cauſe of theſe ſurpriſing phenomena; we muſt viſit the country itſelf, where this conflict of the elements took place, and where the ruins it occaſioned are ſtill to be ſeen.

On the CURE of PERSONS bitten by SNAKES in INDIA.

By John Williams, *Eſq.*

THE following ſtatement of facts, relative to the cure of perſons bitten by ſnakes, ſelected from a number of caſes which have come within my knowledge, require no prefatory introduction, as it points out the means of obtaining the greateſt ſelf-gratification the human mind is capable of experiencing; that of the preſervation of the life of a fellow-creature, and ſnatching him from the jaws of death, by a method which every perſon is capable of availing himſelf of. Eau de luce, I learn from many communications which I have received from different parts of the country, anſwers as well as the pure cauſtic alkali ſpirit; and though, from its having ſome eſſential oils in its compoſition, it may not be ſo powerful, yet, as it muſt be given with water, it only requires to increaſe the doſe in proportion; and, ſo long as it retains its milky white colour, it is ſufficiently efficacious.

From the effect of a ligature applied between the part bitten and the heart, it is evident that the poiſon diffuſes itſelf over the body, by the returning venous blood; deſtroying the irritability, and rendering the ſyſtem paralytic. It is therefore probable that the volatile cauſtic alkali, in reſiſting the diſeaſe of the poiſon, does not act ſo much as a ſpecific in deſtroying its quality, as by counteracting the effect on the ſyſtem, by ſtimulating the fibres, and preſerving that irritability which it tends to deſtroy.

Case I. In the month of Auguſt, 1780, a ſervant of mine was bitten in the heel, as he ſuppoſed, by a ſnake; and in a few minutes was in great agony, with convulſions about the throat and jaws, and continual grinding of the teeth. Having a wiſh to try the effects of volatile alkali in ſuch caſes, I gave him about forty drops of eau de luce in water, and applied ſome of it to the part bitten. The doſe was repeated every eight or ten minutes, till a ſmall phialful was expended: it was near two hours before it could be ſaid he was out of danger. A numbneſs and pricking ſenſation was perceived extending itſelf up to the knee, where a ligature was applied ſo tight as to ſtop the returning venous blood, which ſeemingly checked the progreſs of the deleterious poiſon. The foot and leg, up to where the ligature was made, were ſtiff and painful for ſeveral days, and, which appeared very ſingular, were covered with a branny ſcale.

The above was the firſt caſe in which I tried the effects of the volatile alkali, and, apprehending that the eſſential oils in the compoſition of eau de luce, though made of the ſtrong cauſtic volatile ſpirit, would conſiderably diminiſh its powers, I was induced, the next opportunity that offered, to try the effects of pure volatile cauſtic alkali ſpirit, and accordingly prepared ſome from quicklime and the ſal ammoniac of this country

II. In July, 1782, a woman of the Brahmen caſt, who lived in my neighbourhood, at Chunar, was bitten by a Cobra de Capello, between the thumb and fore finger of her right hand. Prayers and ſuperſtitious incantations were practiſed by the Brahmens about her, till ſhe became ſpeechleſs and convulſed with locked jaws, and a profuſe diſcharge of ſaliva running from her mouth. On being informed of the accident, I immediately ſent a ſervant with a bottle of the volatile cauſtic alkali ſpirit, of which he poured about a tea-ſpoonful, mixed with water, down

down her throat, and applied ſome of it to the part bitten. The doſe was repeated a few minutes after, when ſhe was evidently better, and in about half an hour was perfectly recovered.

This accident happened in a ſmall hut, where I ſaw the ſnake, which was a middle-ſized Cobra de Capello. The Brahmens would not allow it to be killed. In the above caſe no other means whatever were uſed for the recovery of the patient than are here recited.

III. A woman-ſervant in the family of a gentleman at Benares, was bitten in the foot by a Cobra de Capello. The gentleman immediately applied to me for ſome of the volatile cauſtic alkali, which I fortunately had by me. I gave her about ſixty drops in water, and alſo applied ſome of it to the part bitten. In about ſeven or eight minutes after, ſhe was perfectly recovered. In the above caſe I was not witneſs to the deleterious effect of the poiſon on the patient; but ſaw the ſnake after it was killed.

IV. In July, 1784, the wife of a ſervant of mine was bitten by a Cobra de Capello, on the outſide of the little toe of her right foot. In a few minutes ſhe became convulſed, particularly about the jaws and throat, with a continued gnaſhing of the teeth. She at firſt complained of a numbneſs, extending from the wound upwards; but no ligature was applied to the limb. About ſixty drops of the volatile cauſtic ſpirit were given to her in water, by forcing open her mouth, which was ſtrongly convulſed: in about ſeven minutes the doſe was repeated, when the convulſions left her; and in three more ſhe became ſenſible, and ſpoke to thoſe who attended her. A few drops of the ſpirit had alſo been applied to the wound. The ſnake was killed and brought to me, which proved to be a Cobra de Capello.

V. As it is generally believed that the venom of ſnakes is more malignant during hot dry weather than at any other ſeaſon, the following caſe, which occurred in the month of July, 1788, when the weather was extremely hot, no rain excepting a ſlight ſhower having fallen for many months, may not be unworthy of notice:—

A ſervant, belonging to an officer at Juanpoor, was bitten by a ſnake, on the leg, about two inches above the outer ancle. As the accident happened in the evening, he could not ſee what ſpecies of ſnake it was. He immediately tied a ligature above the part bitten; but was in a few minutes in ſuch exquiſite torture from pain, which extended up his body and to his head, that he ſoon became dizzy and ſenſeleſs. On being informed of the accident, I ſent my ſervant with a phial of the volatile cauſtic alkali, who found him, when he arrived, quite torpid, with the ſaliva running out of his mouth, and his jaws ſo faſt locked as to render it neceſſary to uſe an inſtrument to open them and adminiſter the medicine. About forty drops of the volatile cauſtic ſpirit were given to him in water, and applied to the wound; and the ſame doſe repeated a few minutes after. In about half an hour he was perfectly recovered. On examining the part bitten, I could diſcover the marks of three fangs; two on one ſide, and one on the other; and, from the diſtance they were aſunder, I ſhould judge it a large ſnake. More than ten minutes did not appear to have elapſed from the time of his being bitten, till the medicine was adminiſtered. The wounds healed immediately, and he was able to attend to his duty the next day. Though the ſpecies of ſnake was not aſcertained, yet, I judge, from the flow of ſaliva from the mouth, convulſive ſpaſms of the jaws and throat, as well as from the marks of three fangs, that it muſt have been a Cobra de Capello; and

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though I have met with five and six fangs of different sizes in snakes of that species, I never observed the marks of more than two having been applied in biting in any other case which came within my knowledge.

VI. In September, 1786, a servant belonging to Captain S——, who was then at Benares, was bitten in the leg by a large Cobra de Capello. He saw the snake coming towards him, with his neck spread out in a very tremendous manner, and endeavoured to avoid him; but, before he could get out of his way, the snake seized him by the leg, and secured his hold for some time, as if he had not been able to extricate his teeth. Application was immediately made to his master for a remedy, who sent to consult me; but, before I arrived, had given him a quantity of sweet oil, which he drank. So soon as I saw him, I directed the usual dose of volatile caustic alkali to be given, which fortunately brought away the oil from his stomach, or it is probable that the stimulating effect of the volatile spirit would have been so much blunted by it, as to have become inefficacious: a second dose was immediately administered, and, some time after, a third. The man recovered in the course of a few hours. As oil is frequently administered as a remedy in the bite of snakes, I think it necessary to caution against the use of it with the volatile alkali, as it blunts the stimulating quality of the spirit, and renders it useless.

Of the numerous species of snakes which I have met with, not above six were provided with poisonous fangs; though I have examined many which have been considered by the natives as dangerous, without being able to discover any thing noxious in them.

The following is an instance of the deleterious effect of the bite of a snake, called by the natives Krait, a species of the Boa, which I have frequently met with in this part of the country:—

VII. On the 16th September, 1788, a man was brought to me, who had been bitten by a snake, with the marks of two fangs on two of his toes; he was said to have been bitten above an hour before I saw him: he was perfectly sensible, but complained of great pain in the parts bitten, with an unusual languor. I immediately gave him thirty drops of the volatile caustic alkali spirit in water, and applied some of it to the wounds. In a few minutes he became easier, and in about half an hour was carried away by his friends, with perfect confidence in his recovery, without having taken a second dose of the medicine, which indeed did not appear to have been necessary: but whether from the effect of the bite of the snake, or the motion of the dooly on which he was carried, I know not; but he became sick at the stomach, threw up the medicine, and died in about a quarter of an hour after. The man said that the snake came up to him while he was sitting on the ground; and that he put him away with his hand once, but that he turned about and bit him, as described. The snake was brought to me, which I examined: it was about two feet and a half long, of a lightish brown colour on the back, a white belly, and annulated from end to end with 208 abdominal and 46 tail scuta. I have met with several of them from thirteen inches to near three feet in length: it had two poisonous fangs in the upper jaw, which lay naked, with their points without the upper lip. It does not spread its neck, like the Cobra de Capello, when enraged; but is very active and quick in its motion.

I have seen instances of persons bitten by snakes, who have been so long without assistance, that, when they have been brought to me, they have not been able to swallow, from convulsions of the throat and

fauces, which is, I obſerve, a conſtant ſymptom of the bite of the Cobra de Capello: and indeed I have had many perſons brought to me who had been apparently dead ſome time; but never knew an inſtance of the volatile cauſtic alkali failing in its effect, where the patient has been able to ſwallow it.

The following is recommended as a cure for the bite of all vipers, ſnakes, mad dogs, &c.—The perſon bitten muſt, as ſoon as poſſible, take inwardly half a ſpoonful of ſalt, and the juice of a lemon, or ſome good ſharp vinegar, and with the ſame bathe the part bitten; and then, as ſoon as a red-hot iron can be got, burn the place bitten, after which bathe it with ſpirits of any kind, with camphire diſſolved therein; it will ſoon become a running ſore, and all the poiſon entered into the blood will run out at the place it came in. The above knowledge the writer accquired at the river Demerara, in the Weſt Indies, and ſaved the life of a ſailor, who was bit by the ſnake called Borcy, by lime-juice and ſalt, without which, all thoſe bitten by that ſnake die within four hours, vomiting up all the blood from their ſtomachs, the veſſels being burſt.

On the STUDY of NATURAL PHILOSOPHY, NATURAL HISTORY, and MATHEMATICS.

ONE of the moſt material circumſtances on which the relative value of an object of ſtudy depends, is, that it be ſomething real, ſtable, of general import, and not indebted for its conſequence to temporary and conventional modes of thinking. In this reſpect, nature has greatly the advantage over art. Whatever is learned concerning her is an eternal truth, which will preſerve its relation to other things as long as the world endures. The motions of the heavenly bodies, the influence of the elements, the properties of minerals, vegetables, and animals, are *grand facts*, which ſpeak a common language to all mankind in all ages, and afford a perpetual fund of uſe and entertainment. The more wide and comprehenſive a ſurvey is taken of theſe objects, the better they anſwer the purpoſe of enlarging the mind, and eſtabliſhing a baſis for truths of univerſal application. Hence the advantage of ſtudying them in a connected and ſyſtematic mode, and framing general propoſitions concerning them. But the foundation for theſe muſt be a very accurate inveſtigation of particular facts, ſince the inſtant their guidance is quitted, and reliance is placed upon analogical deductions, error commences. Obſervation and experiment muſt, therefore, go hand in hand with reaſoning; nor was there ever a true philoſopher who did not unite theſe proceſſes. I can conceive of no employment of the human faculties nobler than thoſe taking the ſcale of creation, detecting all its mutual connexions and dependencies, inveſtigating the laws by which it is governed as a whole, and the œconomy, of its conſtituent parts, and alternately making uſe of the ſagacity of the ſenſes in minute reſearch, and the powers of intellect in comparing and abſtracting. The ſtudies, then, which range under the heads of natural philoſophy and natural hiſtory, and are comprehended under the general term of phyſics, appear to me to take the lead of all mental purſuits with reſpect to extent, variety, and dignity. Let it be underſtood, however, that I include among them the ſtudy of one of the nobleſt objects nature preſents, and certainly the moſt intereſting to a human creature—that of man himſelf. To aſcertain what he eſſentially is, what are the faculties of body and mind, which characterize him as the head of the animal creation,

and

and what are the variations induced in him by education, habit, climate, and mode of life, is ſtrictly a branch of phyſics, and has, by the beſt writers, been treated as ſuch.

It is, doubtleſs, impoſſible for a ſingle mind to embrace all the objects here pointed out, ſo as to fathom the depths of human knowledge in each; to be, at the ſame time, the mind of Newton, Locke, Boyle, and Haller; but, according to the degree in which a man hath imbibed the leading ideas which conſtituted the intellectual furniture of ſuch minds, I ſhould eſtimate the value of his attainments; and I ſhould prefer, though not in point of genius, yet with reſpect to acquiſitions, one who combined a tolerably accurate acquaintance with all the branches of knowledge poſſeſſed by theſe, to a complete adept in any one of them. The laſt-mentioned of the above perſons, Haller, was ſcarcely, I believe, ſurpaſſed by any man in the variety, and, at the ſame time, the ſolidity, of his phyſical knowledge. Buffon may be named as one whoſe general views were as grand, and whoſe purſuits were planned upon as enlarged a ſcale, as thoſe of any perſon whom ſtudies of this claſs have rendered famous, though he wanted accuracy and ſolidity in many of the particulars of his ſpeculations. As a criterion of this capaciouſneſs and elevation of underſtanding, I would ſuppoſe a delegate ſent from this earth to explore ſome other world, and bring back the moſt complete and important information concerning it: the perſon duly ſelected for ſuch a miſſion would, in my idea, poſſeſs a title to the ſuperiority in queſtion.

Although nature, thus ſtudied, appears to me the nobleſt of all ſubjects that can occupy the mind, I am far from affixing the ſame proportionate value to inveſtigations of detached parts of the works of nature. In theſe, all the grandeur of large and connected views is frequently loſt, and the whole attention is employed on petty details, which lead to nothing further. A very little mind may ſucceſsfully apply itſelf to the arrangement of ſhells and butterflies by their forms and colours, and gain nothing by the proceſs but the ſimple ideas of form and colour, as ſerving for marks of diſtinction. To ſuch minds, an arrangement of ribbands, by their ſhades and patterns, would be a perfectly ſimilar employment. I do not deny that even theſe humble labourers in ſcience are neceſſary to complete the great fabric of the ſyſtem of nature, and give accuracy and uniformity to its nomenclature. Their induſtry and exactneſs deſerve praiſe; but it is better for a ſtudent, capable of more extenſive views, to make uſe of their labours, than to imitate them. What I have ſaid, however, muſt be underſtood with limitation; for, as I have already obſerved, it is incumbent on the inquirer into nature to ſpare no pains in the accurate ſearch after facts; but theſe ſhould be facts not trifling or inſulated, but eſſential to the formation of thoſe general theorems in which ſyſtematical knowledge conſiſts. It is certain, for inſtance, that while the Linnæan claſs of *cryptogamia* ſubſiſt, the vegetable economy muſt be very incompletely known. It cannot, however, be aboliſhed without the minuteſt examination of the generative organs of moſſes, ferns, algæ, lichens, &c. which may, therefore, reaſonably employ the ableſt and moſt philoſophical naturaliſt. Bonnet, a philoſopher in every ſenſe of the word, occupied himſelf for years in microſcopical obſervations and experiments on the ſmalleſt parts of nature, but it was with the purpoſe of eſtabliſhing important concluſions concerning the eſſential characters of the animal and vegetable kingdoms, and the limits between each. Modern

chemiſtry is one of the moſt important branches of phyſics, and comprehends many truly ſublime ſpeculations relative to the globe we inhabit; but its theory is entirely built upon experiments, in which the niceſt mechanical attentions are neceſſary to avoid fundamental errors.

Mathematical ſtudies muſt already be ſuppoſed to ſtand high in my eſtimate, ſince I have placed in the firſt claſs thoſe large and ſublime views of nature, ſome of which could not originally have been formed, nor can now be comprehended, without the principles of mathematics. But, beſides their undoubted value as means, they have, by many, been purſued ultimately, as affording the higheſt and pureſt exerciſe to the intellectual powers.

Fully ſenſible of my own inadequacy to judge of their worth in this reſpect, and, fearful of giving way to partiality, I ſhall only ſpeak of them from obſerving their effects upon others. As far as I have remarked, few of thoſe who, during the early part of their lives, have gone deep into mathematics, acquire ſuch a reliſh for them, as to be induced ſpontaneouſly to continue their application to them at an after-period. Whether it be that they find the requiſite mental exertion too ſevere, or that they become wearied with ſtudies which offer no further proſpects, and furniſh no materials for converſation, it ſeems to me to be the fact, that mathematical purſuits are uſually deſerted as ſoon as the incidental motives which cauſed them to be entered upon, or the firſt ardour of curioſity, have ceaſed. Where this has not been the caſe, they are ſometimes found to occupy the whole mind, to the excluſion of all other objects, pleaſant or uſeful; and, ſurely the ideas of figure and number alone are inſufficient to fill the compaſs of the human underſtanding. A ſtory is told of a profound mathematician, who being with difficulty perſuaded to read through Homer's Iliad, coldly obſerved at the concluſion, that he did not find that the author had *proved* any thing. It would, however, be very unjuſt to repreſent this inſenſibility as the univerſal reſult of mathematical ſtudies. Many inſtances may be produced of their alliance, in the ſame perſon, with polite and philoſophical literature. Of theſe, it will ſuffice to mention the late celebrated d'Alembert, a diſtinguiſhed member, at the ſame time, of the Academy of Sciences and the French Academy, and an admired writer on a variety of topics. A proficiency in abſtract mathematics is certainly an undoubted proof of great mental capacity; and I ſuppoſe the extent of the ſtudy is ſuch, that no apprehenſions need be entertained of exhauſting its objects. Whether, with no further view, it be worth while to expend ſo much time and exertion upon it, I leave you to determine for yourſelf.

Without tracing farther the circle of human knowledge, I ſhall bring my letter to a concluſion after a general obſervation. No kinds of ſtudy can differ more from each other than the ſame from itſelf, as purſued by a man of a ſtrong, and, by one of a weak, underſtanding. The firſt will render a ſmall object important; the ſecond, an important one little. The hiſtory of literature abounds with inſtances in proof of this aſſertion: I ſhall mention one. Elias Aſhmole, in the laſt century, obtained conſiderable reputation here in the multifarious character of a *philoſopher*. He was an aſtronomer, but this noble ſcience in his hands turned to judicial aſtrology. He was a chemiſt, but under this title alchemy was the real object of his purſuit. He was a naturaliſt, but his taſte rather led him to be a collector than a ſcientific obſerver of nature. He was an antiquary, and, in that capacity, made large

large collections for the history of free-masonry in this country: afterwards he soared to the most noble order of the garter, the history of which, with all its laws and institutions, was his *opus magnum*. In this man were united the valuable qualities of industry, exactness, and perseverance; but the foundation of good sense was wanting.—How different from one 'qui nil molitur inepte,' all whose pursuits are directed by a sound understanding! Such an one was the wise Franklin, who, from the most trivial facts, could deduce the most important conclusions —who had always something truly valuable in prospect—and whose touch converted every meaner material to gold.

It is not, then, merely the species of study, but the mind and spirit with which it is pursued, that should regulate our estimate of the intellectual powers of the study. Folly often conceals herself under the mask of seriousness, and wisdom sometimes is light and playful. The latter knows she hazards nothing by occasionally descending from her dignity; whereas folly loses all by losing appearances. A great latitude of mental occupation may be admitted, provided good sense presides over all—that quality which truly is, as our ethical poets asserts,

'Though no science, fairly worth the seven.'

FRUITLESS CURIOSITY; An Eastern Tale.

IN the city of Oojein, there was a young merchant, named Yezez, who abounded in wealth, and had never yet experienced the damp of misfortune. His days constantly passed in music and feasting. One day he was enjoying the festivity of a jovial company, when in the midst thereof a stranger appeared, and, sitting down on a corner of the carpet, cast a look of sadness on the assembly. All at once they were infected with his melancholy, and re-echoed his sighs. Yezez enquired into the situation of this stranger, who, though repeatedly questioned, made no answer. This added to Yezez's surprize, and increased his impatience, and he continued to importune the stranger, who at length said:

"Although thy request might have been with-held, and can do thee no good, yet I shall comply with it. Know then, that formerly my wealth and possessions were great beyond calculation. Having at one time, according to the custom of merchants, prepared a valuable assortment of goods, with an eye to profit, I departed for the city of Kinnouje. Several capital merchants accompanied me on the journey. At about four days distance from Kinnouje, having accidentally separated from the caravan, I strayed into a wilderness, where I had almost lost myself, as nothing appeared before me but a frightful desert. In every path that I explored from morning to evening, I found no resting place, while at every distant horrible sounds struck my ear, and I every now and then perceived strange phantoms, which made my heart tremble.

"As the gloom of night advanced, the plain appeared to my imagination as a stormy sea, whose billows would swallow up the fish of the sky. The branches of the trees, beating against each other from the violence of the wind, bowed to the ground; the sand of which, agitated by the storm, rose in waves, so that you might call them the serpents of Pharoah's rod, ready to devour the world. Helpless, I resigned myself to destruction, and lay down at the foot of a tree, expecting instant death. Suddenly the sound of human feet was heard, and, on turning my eyes that way, I beheld a person advancing with great celerity, as if flying on the wings of speed. Alarmed, I endeavoured to hide myself, and invoked

invoked heaven for protection. The man, however, coming up, exclaimed, Who art thou? and what doſt thou in this perilous deſert alone? Fear kept me ſilent, when, advancing with great fury toward me, he ſaid, inform me of thy circumſtances, or I will ſever thy head from thy body with my ſabre. In dread of my life, I attempted to reply, and ſaid, O valiant youth, be not enraged, for I am a mortal, who by accident being ſeparated from my camp, have been bewildered in this deſart; have pity upon my forlorn condition; direct me in my paths, that I may rejoin my friends.

"When the young man was informed of my ſituation, his wrath gave way to compaſſion: Recover, ſaid he, from your fears, and you ſhall inſtantly be delivered from this dreadful place. Not far from hence is a moſt delightful city, whoſe ſcite, like the gardens of paradiſe, diſpels care, and whoſe inhabitants are enchanting as the dwellers in heaven. It has been from ancient days called the city of Laaburbauz, and I am named Rizwaun by the happy inhabitants. Haſten then, and follow me.

"As I had obſerved in the young man the manners of courteſy and an affable behaviour, I gave thanks to heaven, and followed him cloſe, till at length we reached the gate of the city, and, on ſeeing its beauty, I fancied myſelf in heaven, and gazed with aſtoniſhment."

The ſtranger had advanced thus far in his narrative, when ſuddenly two wild cats, claſping each other with fury, dropped from the baluſtrade of the houſe into the midſt of the company, who were moſt attentively liſtening. Alarmed at this occurrence, they all ſtartled, and the ſtranger unperceived vaniſhed from among them. When Yezez had recovered himſelf, he was greatly diſtreſſed at the departure of the traveller, and that his ſtory was not concluded; perſons ran to every quarter to ſeek for him, but he was not to be found. Such was the curioſity of Yezez to know the remainder of his adventures, as to exceed all bounds, and he reſolved on a journey to Kinnouje, againſt all the remonſtrances of his friends and relations. He ſet out with a few beloved companions, and in a ſhort time reached Kinnouje, where he explored every part, but found no intelligence of the young man. Day by day he became ſo impatient that it waſted his health and his ſubſtance; his companions left him, and he ſubmitted to poverty, diving ſometimes into the foreſt, and ſometimes winding the deſert. In this manner he explored many countries, but without ſucceſs. Inceſſant fatigue reduced his body to a ſkeleton.

At length one day, as he was paſſing over a deſert, and notwithſtanding all his endeavours could not reach a place of ſhelter, he met a compaſſionate looking youth, who tenderly enquired the cauſe of his diſtreſs. Yezez, having related his adventures, requeſted his aſſiſtance to heal his ſorrows. The youth replied, "Ah, thou fool, what miſeries haſt thou brought upon thyſelf! Merely upon hearing a tale from an unknown perſon, without examining into the truth or probability of it, to commit thyſelf a wanderer in the deſert, and fooliſhly to meaſure the wind with thy hand, was not wiſe. Thy difficulties are impoſſible to be relieved, ſo haſten away, and follow thy own policy." Yezez replied, "O generous youth, ſince abſenting myſelf from my family I am involved in a bewildering path; how can my ſpirit allow me to return back when advanced half way, without having obtained my object? For God's ſake, exert thy liberality, and, as far as in thy power, lend me thy aſſiſtance." The youth rejoined, "Imprudent man, how canſt thou, by my aſſiſtance,

aſſiſtance, arrive at the city of Laabutbauz, which has no exiſtence upon the face of the earth? Eſcape therefore out of this wilderneſs, and get thee into a place of ſafety. Take this ivory ſabre, and, whenever thou art fatigued and inclined to reſt, draw it from the ſilken ſcabbard, and lay it carefully by thee. When thou continueſt thy journey, ſheath it, and be cautious not to loſe it." Having ſaid this, the young man vaniſhed from his ſight.

Yezez now betook him again to travel, and, heedleſs of the precipices and declivities in his route, with cheerfulneſs ſubmitted to the toil of walking till evening. He then ſtopped, and, as he had been deſired, drew the ſabre from the ſcabbard; when lo! a vaſt city appeared in the plain, of ſuch extent as fancy could but feebly deſcribe. Having retired to a houſe, he choſe an apartment, and being refreſhed with ample fare, betook himſelf to ſleep. In the morning, having girded on his ſabre, he reſumed his travel in the wilderneſs, and, after having been for many days ſupplied with reſting places at night by the power of the ſword, at one day found himſelf on the bank of a lake, and ſtopped to quench his thirſt. Suddenly, as he was drinking, the belt of the ſabre breaking in the middle, it fell into the water, ſunk to the bottom, and was irrecoverably loſt.

On this accident, deſpair poſſeſſed his mind, and he wandered in the deepeſt diſtreſs. At length, he reached a plantation, where he beheld a huſbandman ſitting on the graſs, who repeatedly lifted up a cup to his lips, while his wife ſcattered ſeeds on the ſoil he had dug. An inclination to aſſociate with the huſbandman aroſe in the mind of Yezez, and, advancing a little, he ſat down at a diſtance. The countryman and his wife, looking upon him with kindneſs, enquired his ſituation; upon which, Yezez recounted his adventures, and ſignified the object of his heart. The huſbandman replied, "Ah! beautiful youth, what vain ſcheme and idle ſpeculation is this! Wander not fooliſhly in the path of deſtruction, but quit this dangerous expedition, for it is impoſſible it ſhould ſucceed. Aſſociate with us, that thou mayeſt repoſe from the proſecution of fortune." Yezez accepted his offer, and reſted from the fatigue of unavailing travel.

As it happened, in this plantation, juſt after the breathing of dawn, every morning aroſe a miſty vapour, which, by degrees deſcending, wholly enveloped the branches and leaves of a particular tree. Gleams of light then ſhone through the miſt, and a hand, dazzling as the ſun, was extended from it. The huſbandman advancing near the tree, in the manner of ceremonious cupbearers, placed a goblet of ſparkling wine on the hand, which for an inſtant vaniſhed, and re-appearing, gave back the goblet empty. This was repeated to the fortieth cup; after which the hand withdrawing, the vapour began to aſcend, and quickly diffuſing itſelf in the air, in leſs than an hour was wholly diſperſed.

After ſome time, the huſbandman having occaſion to leave home for a few days, entruſted the care of his houſe to Yezez, giving him a particular charge to ſupply the hand regularly with wine. The imprudent youth, impelled by curioſity to penetrate into the myſtery, as he was one morning delivering the cup, raſhly graſped the hand with all his force, when ſuddenly a noiſe, more dreadful than the loudeſt thunder, ſhook the atmoſphere, and a bird of monſtrous ſize, iſſuing from the miſt, ſeized him in its talons like a ſparrow, and mounted into the air above the higheſt clouds, then gradually deſcending, at length alighted on the pinnacle of a lofty dome, when, loſing its hold, Yezez rolled over and over

like

like a ball. He at length fell to the bottom of a pit, ſo dark that night, from its blackneſs, might have added to her gloom. Much as he tried to explore a paſſage, he found no inlet to the path of hope, ſo that, preparing himſelf for death, he ſat down, expecting his fate.

In this ſtate, he at length perceived a glimmering of light, and, on examining the place whence it proceeded, ſaw a door which opened to his preſſure into a narrow paſſage, through which having paſſed, he found himſelf in a court ſurrounded by a high wall. Having climbed to the top, he let himſelf down by his hands on the other ſide, and fell into a net placed below. A man ruſhing upon him, flung a rope round his neck, and dragged him to the foot of a lofty building, from a window of which a beautiful damſel looking out, ſaid to his conductor, 'To-day's game is very thin, let him be releaſed for ſome time, till he ſhall be worthy our acceptance.' Upon this the man ſet him at liberty; when Yezez, overcame by fear and fatigue, fell down ſenſeleſs on the ground.

On his recovery, he found himſelf alone in the midſt of a barren plain. Suddenly advanced toward him on horſeback an old man, who, on coming up, enquired the cauſe of his diſtreſſed ſituation; and, on being informed of his adventures, conſoled his ſorrows, and preſented him with refreſhments, on taſting which his ſtrength returned, and his ſpirits were revived. The old man then having directed him to follow a particular path, took his leave, aſſuring him that he would ſoon arrive at the object of his hope.

Yezez, having thanked his generous preſerver, proceeded with lightened heart, and renewed ardour. Travelling all night, he arrived by day-break at the ſkirts of a city, of moſt elegant building. The environs of it were alſo delightful. On every ſide flowed deliciouſly-taſted ſtreams among beds of flowers, as in the gardens of heaven. Yezez remained for ſome time motionleſs as a ſtatue; and, when recovered, haſtened to the city. On his arrival at the gate-way, he ſaw the doors ſet with valuable jewels, and the way paved with agate, ſprinkled over with muſk. The paths were clear from ſoil as the hearts of the virtuous; and the air, like the air of melody, gave relief to the ſorrowful heart. The ſtreets, like the fumes of wine, excited cheerfulneſs; and the houſes, as the regular rows of an avenue, afforded ſenſations of ſerenity.

While he was meditating and admiring theſe objects, two young men advanced with ſpeed, and each ſeizing an arm, conducted him to a ſplendid palace. He was then led to a warm bath, and, after waſhing, being rubbed with perfumes and eſſences, was arrayed in royal robes, and a ſplendid crown ſet with jewels was placed on his head. From the bath he was introduced in a ſumptuous hall, and ſeated upon a gorgeous throne, befitting the ſtate of a powerful monarch. The nobles of the empire and officers of ſtate, like reſpectful ſlaves, having made the uſual proſtrations, and kiſſed the ground, raiſed their congratulations to the ſkies. Yezez remained without power to ſpeak, loſt in aſtoniſhment and doubt whether he was in a dream or awake.

At length, a venerable vizier informed him that he was in the city of Laabutbauz, the ſovereign of which was juſt deceaſed; and, according to the laws of the empire, he, as the firſt ſtranger arrived, was his ſucceſſor in the throne, and to be united in marriage to the beautiful daughter of the late monarch; but on condition, however, that he muſt make no diſhonourable attempts on the royal haram. Yezez, on hearing this ſpeech, was overcome with a joy that cannot be deſcribed.

When

When the ſun deſcended to the weſt, a ſplendid throne ſet with jewels was placed in the apartment, on which the beautiful princeſs, moſt richly adorned, ſat like a brilliant ſtar in the throne of the ſky. They ſhowered garlands of flowers upon her head, and made offerings of rubies and pearls. When the lucky inſtant for the king's admiſſion arrived, the attendants withdrew from the bridal chamber, from the door of which, to the hall of public audience, roſy-cheeked damſels, elegantly attired, lined the way in two rows of dazzling beauty.

When the bride and bridegroom were ſeated on the ſame throne, they ſeemed as two cypreſſes in the ſame border, or as the ſun and moon conjoined in one ſign. The female attendants formed a ring about the throne, like planets round the ſun; and, having made their obeiſance, began to ſing and dance, playing, at the ſame time, on various inſtruments. The king became ſo enraptured at their performances, that he loſt all diſcretion, and, forgetting the vizier's conditions, attempted to kiſs the princeſs; who, diſſembling her diſpleaſure, gently rebuked his ardour, and filling a goblet with wine, preſented it to him, which he had no ſooner drank, than he fell ſenſeleſs aſleep.

In the morning, on awaking, Yezeez gazed wildly around, but perceived no ray from the ſun of beauty, nor any trace of laſt night's feſtivity. On the contrary, he found himſelf in a dreary wild, ſtill doomed to the horrors of ſolitude; again he began to travel, but had not gone far, when, to his aſtoniſhment, he ſuddenly beheld the walls of Oojein. His diſappointment overwhelmed him with diſpair, and in this condition he entered his own manſion. Having diſtributed the remainder of his effects to the poor, he entered a ſociety of devotees, and fixed his abode in a foreſt unfrequented by man, where he ſpent the remains of his miſerable life.

This diſordered world, of frail foundation, is the abode of viſionary deception, in which thoſe enſnared by its temptations acquire only ſhame and remorſe. It is a ſtore of concealed miſeries, and thoſe who quaff the goblet of its enjoyments, ſwallow the bitter portion of repentance. Let thoſe who give the rein to impatient curioſity and wild deſires, think of the fate of Yezeez.

WEST-INDIA WET DOCKS.

SOME months ago (p. 164 & ſeq. of this volume) we detailed ſome of the principal arguments for and againſt the meaſure of erecting docks for the reception of ſhips of a certain burthen, which was then in agitation. The act for carrying the ſame into effect was paſſed on the 12th of July, 1799; and, on the anniverſary of that day, namely, on Saturday, the 12th of July laſt, the ceremony of laying the firſt ſtone of the buildings of this magnificent undertaking was performed. The company aſſembled at the London Tavern, at one o'clock, and moved in the following proceſſion to the Iſle of Dogs:

The DIRECTORS of the WEST-INDIA DOCK COMPANY;
and, in the laſt of their carriages,
The CHAIRMAN and DEPUTY CHAIRMAN; then

The LORD CHANCELLOR,
Earl SPENCER,
Lord HAWKESBURY,
Right Hon. WILLIAM PITT,
Right Hon. HENRY DUNDAS,
Right Hon. DUDLEY RYDER,
Right Hon. THOMAS STEELE,
Right Hon. SILVESTER DOUGLAS,
Sir JOSEPH BANKS, Bart. K. B.
Sir AND. SNAPE HAMMOND, Bt.

and a numerous train of members of parliament, including thoſe of the ſelect committee of the houſe of commons for the improvement of the port of London.

Soon after two, the proceſſion arrived at the works, where Lord Carrington, and many other diſtinguiſhed perſonages of both ſexes, had aſſembled, to be preſent at the ceremony, which was conducted in the following manner:—The ſtone had been previouſly prepared to receive two glaſs bottles, one of which contained the ſeveral coins (gold, ſilver, and copper) of his preſent majeſty's reign, and in the other, the following inſcription and tranſlation thereof in Latin, were placed;

Of this Range of Buildings
Conſtructed, together with the adjacent Docks, at the Expence of
public ſpirited Individuals,
Under the Sanction of a provident Legiſlature,
And with the liberal co-operation of the Corporate Body of the City
of London,
For the diſtinct Purpoſe of complete Security and ample Accommodation
(hitherto not afforded)
To the Shipping and Produce of the Weſt-Indies at this wealthy Port,
THE FIRST STONE WAS LAID
On Saturday, the Twelfth Day of July, A. D. 1800,
By the concurring Hands of
THE RIGHT HONOURABLE LORD LOUGHBOROUGH,
Lord High Chancellor of Great Britain;
THE RIGHT HONOURABLE WILLIAM PITT,
Firſt Lord Commiſſioner of his Majeſty's Treaſury, and Chancellor of
his Majeſty's Exchequer;
GEORGE HIBBERT Eſq. the Chairman,
and
ROBERT MILLIGAN, Esq. the Deputy Chairman,
OF THE WEST-INDIA DOCK COMPANY;
The two former, conſpicuous in the Band
Of thoſe illuſtrious Stateſmen
Who, in either Houſe of Parliament, have been zealous to promote,
The two latter diſtinguiſhed among thoſe choſen to direct,
AN UNDERTAKING
Which, under the Favour of GOD, ſhall contribute
Stability, Increaſe, and Ornament, to
BRITISH COMMERCE.

The bottles being depoſited in the receſſes made to receive them, and alſo a plate with the directors' names engraved thereon, Mr. Tyrrell, the clerk and ſolicitor to the Weſt-India Dock Company, read the inſcription, and the four noble and honourable perſonages named for that purpoſe, raiſed the ſtone, (by means of four rings fixed thereto,) and laid it in the proper ſituation. The ſpectators then gave three times three hearty cheers, and declared their beſt wiſhes for the ſucceſs of the undertaking. After the ceremony, the company viewed the extenſive works carrying on at the Iſle of Dogs, and expreſſed great pleaſure and ſatisfaction at the ſpirited exertion manifeſted by the progreſs already made in a concern of ſuch magnitude. The company afterwards returned by water from Blackwall, in the barges belonging to the Admiralty and Navy Boards, &c. &c. which were in attendance on the occaſion.

An elegant entertainment was provided at the London Tavern, where the

the Duke of Portland, and ſeveral other noblemen and gentlemen of diſtinction, joined the company; and the remainder of the day paſſed as uſual upon ſuch occaſions.

CEREMONIES EMPLOYED AT THE BURNING OF THE BODY OF A DECEASED LAMA AMONG THE CALMUC TARTARS.

IN the year 1772, the chief lama of the Derbet horde of the Calmucs, on the Wolga, named Abagai, died at his reſidence not far from Sarepta, in the 94th year of his age, after a tedious illneſs. When this event was made known, all the *labans*, or *gellongs*, that is, prieſts, then preſent, aſſembled to deliberate how they ſhould diſpoſe of the body, according to the rules preſcribed in their ſacred books; and an account of this remarkable death was immediately tranſmitted to the prince of the horde, Zebek Ubuſchi, and to his miniſters. He was viſited alſo by all the prieſts, who requeſted that he would order the one next in rank to the deceaſed to repair to his late reſidence, for the purpoſe of carrying into execution the command of the ſacred books. This office fell to the lot of Samtan, or Dajantſhi Lama, who had received the latter title of honour on account of his having lived in a monaſtery, or hermitage, till he attained to that rank. Early in the morning, next day, he ſet out for Sarepta, with a numerous train of prieſts, as the intended ſucceſſor of the deceaſed lama.

As, on ſuch occaſions, each prieſt receives a conſiderable part of the property left by the deceaſed lama, the number aſſembled was exceedingly great; ſo that, in the courſe of a day and a half, above 70 gellongs, and many others of inferior rank, were collected. For thoſe of the higheſt rank, a ſufficient number of horſes, partly ſaddled, and partly unſaddled, were provided, and diſtributed among them according to their dignity. There was alſo plenty of ſheep, and other animals, intended to be killed for food. The Dajantſhi Lama then called the prieſts together, to regulate the funeral ceremonies. For that purpoſe the ſacred books, which had, till that period, been kept cloſely ſhut up, were produced; and, after all the circumſtances attending the lama's death, together with the time, had been compared with the rules in theſe books, it was concluded that the body ſhould be burnt.

The place appointed by the new lama for performing the ceremony was the Meo-Chammur, or ſummit of a ſandy hill, near Sarepta; from which the hut of the deceaſed, where ſtrict guard was kept to prevent any one from approaching it, was diſtant only a few hundred paces. The foundation of a furnace was then accurately meaſured out by the lama himſelf; and the earth was dug up with great care and ſolemnity by the gellongs and prieſts; for no perſon of any other condition durſt put a hand to the work. During this labour, the lama, accompanied by the moſt diſtinguiſhed of the prieſts, returned to the habitation of the deceaſed, where they ſat down in a circle, and prayed from books with great earneſtneſs and fervour. While they were thus employed, the deceaſed was ſtripped of his uſual clothing, and his yellow ornaments, *jamon chubzuſun*, were put upon the body, together with a yellow lackered five-pointed crown, called *ooli-malaanai*. His throne, on which he had breathed his laſt, with a devout benevolent aſpect, ſitting croſs-legged, with his hands folded, was raiſed up, and, after his wide yellow dreſs had been ſpread out around it, he was ſuffered to remain in that ſtate. The entrance of the habitation was

covered by a particular kind of curtain, and guards were placed on each ſide to prevent the common people from looking in when the prieſts entered or went out.

In the mean time the prayers were continued at intervals; and, on a certain ſignal being given, the people, aſſembled without, were ſuffered to enter, one by one, uncovered, in order that they might pay their laſt reſpect to the deceaſed, by kneeling and touching his yellow robe with their foreheads. As the number collected was, however, too great, the new lama at length went out, and beſtowed his benediction on all thoſe within his reach, by laying his roſary *(erken)* on their head; but, as the throng around him increaſed more and more, he diſtributed a general benediction among the whole multitude, by waving the roſary, after which he returned to pray, with deep ſighing and ſobbing. Such of the people as had not obtained the lama's benediction, ſhewed their reſpect and veneration by walking round the hut of their deceaſed, and, as it were, deified lama; and counting their beads, amidſt continual ſighs, while they repeated, by way of prayer, the monoſyllables *om ma ni pat me chung*; and every now and then, in going round, threw themſelves down, with their faces towards the earth, before the door of the hut.

After ſome time, two ſingular figures, made of dough, were brought out from the hut, on wooden trenchers, and borne towards the place deſtined for the furnace. They had each two legs and two arms; but, in other reſpects, they bore a greater reſemblance to devils than to men.

While prayers were performing in the hut of the deceaſed, the reſt of the prieſts ſat together in circles, diſperſed here and there, filled with conſternation, and viewing attentively what was going on. A deputation, appointed by the new lama, made a diſtribution to the prieſts, according to their rank, of the cattle and other property left by the deceaſed; and, by command of the prince, ſix hundred rubles, in ready money, were collected from the horde, to defray the expence of the funeral, and to be divided among the prieſts.

The four ſides of the foundation, dug for the furnace, in which the body was to be burnt, were directed towards the four cardinal points. On the north, ſouth, and eaſt, ſides, large fire holes were dug, and covered towards the ſide of the furnace with earth, that the wood might lie under the covering, and not within the furnace itſelf, to prevent any of the aſhes of the wood from being mixed with the aſhes of the body. The bottom was then conſtructed of tiles, which had been conveyed on horſeback by gellongs from the diſtance of ſome werſts; and, inſtead of lime, clay was employed to cement them. When the furnace was raiſed about a foot above the earth, a large iron tripod, made for the purpoſe, was fixed in the middle of it, and one of the gellongs immediately placed himſelf in the furnace, croſs-legged, on the tripod, in order to try whether it would anſwer the intended purpoſe. A kind of hut was then erected around the furnace, with poles, which were covered up to the top with pieces of old felt. This hut was about eighteen or twenty feet in height; and, at the top was a large opening, to afford a paſſage to the flame and the ſmoke.

All the prieſts who were preſent, after viewing the furnace, went in proceſſion, accompanied by the new lama, to the habitation of the deceaſed, where the fifteen prieſts, who were to officiate, put on the dreſs peculiar to their office. This dreſs conſiſted, firſt, of a ſort of ſhirt, called *bitſchan mujak*, which the prieſts uſe inſtead of breeches and ſtockings,

ſtockings. It is worn next the ſkin, and is gathered in plaits, and faſtened round the middle, by means of a broad girdle. Over this was put the *ſchúbi chubzuſun*, which is a ſhort red ſhirt without ſleeves, and open at the breaſt; alſo the *giſa majak*, a piece of red cloth, placed around the body in folds, above the firſt ſhort *majak*, and faſtened by means of a red ſaſh; the ſecond *majak* muſt hang down, almoſt to the heels. The chief lama, alone, had a *jamohn chubzuſun*, or red ſhirt, with ſhort ſleeves, which was faſtened by means of a broad yellow girdle. In the laſt place, all of them had a *tſchogi chubzuſun*, or large ſquare piece of ſilk, which, except a border, two ſpans in breadth, conſiſted of red and yellow patches, four inches ſquare, diſpoſed checquer-wiſe. Some, however, had this piece of ſilk entirely yellow. It was thrown over the ſhoulders, ſo as to reach the ground behind; and the two corners of it before were faſtened over each other on the breaſt. The arms, head, and legs, during the ceremony, were bare; and each had wound his roſary around his arm; all which gave them a very terrible appearance.

After they had put on their dreſs, a certain kind of veſſel called *ordu charaſch*, was brought forth, and put into the hands of the *bakſhi*, or inſtructing prieſt, who walked next to the lama; and who, inſtead of the variegated piece of ſilk, had one entirely red. Another ſmall metal veſſel, of coſtly workmanſhip, containing ſacred water, mixed with ſpices and ſugar, and ornamented at top with a very beautiful peacock's feather, was delivered to the lama, and borne by him at the head of the proceſſion. Eight of the gellongs, dreſſed as above deſcribed, ſupported the bier, and the other five had in their hand each a bell. The habitation of the deceaſed was torn open behind with the utmoſt expedition, and the body, after the large yellow ſilk cloth ſuſpended from its ſhoulders had been thrown entirely over it, and the high ſpiked crown had been put on its head, was taken out, and placed, in a ſitting poſture, on a bier made for the purpoſe. The bier was borne by the eight gellongs, and the proceſſion moved towards the furnace in the following order; firſt, the lama, then the bakſchi, after him the dead body, then the five gellongs, with their bells, and, in the laſt place, the remainder of the muſic and the people. During the proceſſion, the lama, every now and then, dipped the peacock's feather in the ſacred water, and ſprinkled it every where around him.

The inſtruments of muſic, beſides the bells, were three long copper trumpets, which emitted, at moſt, two or three baſs notes, and which followed behind. They were full three yards in length, and therefore were ſuſpended by rings to two poles, and, in that manner, carried by two men. There were alſo four drums ſuſpended from a pole; and two muſicians, with braſs cymbals, which were beat in the ſame manner as the Turkiſh.

The people, who had aſſembled in crowds on all ſides, were kept off by prieſts appointed for that purpoſe, and armed with ſtrong cudgels. As ſoon as the proceſſion reached the furnace, the muſicians placed themſelves in a ſemicircle before the entrance of the hut, and made a loud noiſe with their inſtruments. The body of the deceaſed lama was then carried, with great ſpeed, into the hut, and placed on the tripod, after the crown and yellow covering had been taken from it. Both theſe articles were afterwards conveyed back, with the ſame proceſſion and muſic, to the habitation of the new lama. The next operation was to compleate the conſtruction of the furnace, which was done with great

privacy.

privacy. Two pieces of iron were put round the neck of the deceaſed, projecting ſo far on each ſide, that the ends of them could be built into the wall. Theſe ſerved to keep the body upright in the midſt of the fire. The top of the furnace was arched, in a ſloping manner, over the head of the dead body; and, on the weſt ſide, where there were no fire-holes, a ſquare opening was left in the top, through which, while the body was in a ſtate of combuſtion, tallow and other inflammable ſubſtances were poured. The wood deſtined for fuel was all cut, exactly of the length of the fire-holes, and a great quantity of butter, incenſe, and reſin, was intermixed with it. Near the furnace was placed a kettle, in which the butter was melted with the other ingredients: and, on both ſides of the furnace, there were ſmall altars, covered, as uſual, with ſacred veſſels and lamps. A magnificent throne was prepared, on the weſt ſide, for the officiating lama; and, when every thing was ready, the lama put on the yellow wrapper of the deceaſed, placed his crown on his head, and ſeated himſelf on the throne. The gellongs, who had laid aſide their ſacerdotal habits, and aſſumed their uſual dreſs, ſat down in a circle around him. Each had a bell in his left hand, and a book lying before him, on his knees, and on a ſignal given by the lama, the ſmall lamps on the altar, and the wood in the three fire-holes of the furnace, were immediately lighted. The two figures of dough already mentioned appeared alſo on one of the altars. The fire was lighted about ſeven o'clock in the evening, amidſt prayers, ſinging, and the noiſe of bells and muſical inſtruments, which was ſometimes interrupted by converſation between the lama and the bakſchi, reſpecting ſome paſſages of the ſacred books. The prieſts who kept guard were, in the mean time, ſtrictly forbidden to ſuffer any perſon to peep in through the holes in the tent. Wood was continually thruſt into the fire-holes; and the lama, by means of a ladle with a long handle, furniſhed at the fore part with ſmall ſpouts, poured ſome of the greaſe which ſtood near him through the aperture upon the body, by which means the fire was ſo ſtrengthened, that the flames roſe, in a continued column, to the height of eighteen or twenty feet above the furnace. It was found neceſſary, therefore, to enlarge the aperture in the top of the tent, to prevent it from being deſtroyed. The gellongs, alſo, were ſoon obliged to ſtand ſo far back, that every thing which took place within the tent, or hut, could be plainly ſeen. At certain times the lama threw the bark of trees, daubed over with reſin, and pieces of conſecrated white ſilk, into the top of the furnace; and as he was expoſed to great heat by ſtanding ſo near it to pour the fat over the body, a ſcreen was held conſtantly before his face by one of the gellongs, which ſecured him from the flames, but permitted him to ſee the aperture in the top of the furnace. The prayers offered up in the Tangut language, while the body was burning, became always longer, and were uttered with a louder tone of voice. They were intermixed with the ringing of bells, the clapping of hands, ſnapping of fingers, thruſting the fingers through each other, and then drawing them back, great contortion of the eyes and face, and various movements of the head.

This formidable fire was kept up for three hours, after which the furnace was ſuffered to ſtand ſome hours to cool. One can ſcarcely believe with what ſtrength the fire was maintained, by the air which paſſed through the furnace, and the different aromatic ſubſtances which were thrown into it, prevented any diſagreeable effect from the ſmoke, or the ſmell of the body. Next morning, when the furnace had cooled,

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it was opened with great ſecrecy, under cover of the tent, and, the body, ſhrivelled like a mummy, being taken out, was divided in portions among the prieſts. Some of the poor people alſo, who were able to force their way through the crowd, obtained ſmall bits of the little which was left. This burnt ſubſtance of the lama's body (*Lamain-Diſhinder*) is conſidered, by the ſuperſtitious people, as a ſacred medicine; and it may, therefore, be ſaid, that the lama is gradually conſumed by his own worſhippers.

This mode of burning the body produces ſcarcely any aſhes, as the ſkin, fleſh, and bones, are ſo baked, by continually pouring fat over it, that the whole maſs has the appearance of a cinder, and is equally friable. The few aſhes, however, which remain, are carefully ſcraped together, with the aſhes in the fire-holes, and are preſerved by the prieſts. After the furnace was opened, it was entirely raſed to the foundation, and not a ſingle ſtone of it left. All the materials were carried in a cart to the other ſide of the Wolga, where the horde at that time reſided. At the four corners of the ſpot, where the furnace had ſtood, high flags (*mani*) were erected; and, at the end of ſome weeks, when the horde returned to the diſtrict of Sarepta, a ſmall ſtone chapel was conſtructed in the middle of the four flags, and filled in the inſide with inſcriptions, images, rags of old clothes, and the like, and ſurrounded by a ditch. This formed the concluſion of the whole ceremony.

OF THE LANGUAGE OF BIRDS.

IN general, it may be remarked, that every ſpecies of birds have peculiar modulations of voice, expreſſive of love, of pain, of anxiety, of anger, of complacency, and of good or bad fortune. Theſe expreſſions, however, ſeem to be confined and intelligible to the individuals only of the ſame ſpecies. But there are certain ſounds, particularly thoſe of danger and of terror, which are perfectly underſtood, not only by the ſame ſpecies, but even by different genera and orders of birds. When the fox wiſhes to ſurprize birds in the neighbourhood of hedges, bruſhwood, or trees, he lies down on his belly, and extends his hind-legs, as if he were dead. In this ſituation, however, he is perfectly vigilant, and cunningly obſerves the motions of the birds along the hedges and trees. If any of them happen to ſpy him, they immediately ſend forth ſoft, mournful, but ſhrill, cries, to alarm their neighbours, and to adverti ſe them of the enemy's approach. Blackbirds and jays have been frequently obſerved to follow the fox, flying from tree to tree, and often repeating the ſame cries of alarm and danger. Theſe cries, by whatever birds they are uttered, are underſtood by every ſpecies within hearing, who inſtantly uſe all their arts of defence againſt the common enemy. Birds are well acquainted with their natural enemies, and this knowledge ſeems to be purely inſtinctive, and not derived from experience or obſervation. When they obſerve the pine-weaſel, though for the firſt time, they utter the ſame mournful cry to announce his approach as when they ſee a fox. It is likewiſe worthy of remark, that birds utter this peculiar cry upon the appearance of all carnivorous animals, as the wolf, the fox, the pine-weaſel, the cat, &c. but never againſt the ſtag, the roe, the hare, nor againſt man, who, of all animals, is the greateſt deſtroyer of the inferior tribes.

The language of moſt birds is a muſical language, and reducible, by a pitch-pipe, to a muſical key. All ſpecies are not equally eloquent. The

The language of ſome-ſpecies is copious and fluent, but that of others is confined to a few important ſounds, which are neceſſary to expreſs barely their feelings and their wants. But no bird, like the finny tribes, is perfectly mute. The language of birds, Mr. White, of Selbourne, remarks, is very ancient; and like other ancient languages, very elliptical. They ſay little, but much is meant and underſtood. Owls have a very expreſſive language. They hoot in a fine vocal ſound, which has a conſiderable reſemblance to the human voice. This note ſeems to expreſs complacency; and ſometimes rivalſhip among the males. They likewiſe uſe a quick call, and a horrible ſcream; and they ſnore and hiſs, when they mean to threaten and intimidate. The note of the eagle-kind are ſhrill and piercing; and, in the ſeaſon of love, very much diverſified. Ravens, beſide their loud croaks, ſometimes exert a deep and ſolemn note, which makes the woods reſound. The amorous ſound of a crow is ſtrange, and even ſomewhat ridiculous. In the breeding ſeaſon, rooks make clumſy attempts towards ſinging. The parrot-kind poſſeſs a great range of modulation in their voice, as appears by the facility with which they learn to pronounce words, and even ſhort ſentences. The coo of the pigeon is amorous and mournful. When the male makes love, or is jealous of rivals, he erects his body, raiſes the feathers of his neck and head, and employs many ſtrutting and lively geſticulations. To theſe movements he adds a guttural but not unpleaſant kind of ſpeech, which is ſoft and alluring when he means to ſolicit the female. When jealous of a rival, he utters the ſame notes, but gives them a more ſharp, and even a menacing, tone. The woodpecker, when pleaſed, ſets up a loud and hearty ſpecies of laugh. The goat-ſucker, or fern owl, from the duſk till day-break, ſerenades his mate with ſounds ſimilar to the clattering of caſtanets. Moſt of the ſmall birds, or paſſeres, expreſs their complacency by ſweet modulations, and a variety of melodious ſounds. The ſwallow, by ſhrill alarm, rouſes the attention of his ſpecies, and tells them that the hawk approaches. Gregarious and aquatic birds, eſpecially thoſe of the nocturnal kind, who ſhift their abodes in the dark, are extremely noiſy and loquacious; as cranes, wild geeſe, wild ducks, &c. Their perpetual clamour prevents them from diſperſing and loſing their companions.

We ſhall now make a few obſervations on domeſtic fowls, whoſe language is beſt known, and, of courſe, beſt underſtood. The voice of the peacock, like thoſe of many birds of the fineſt plumage, is harſh and grating. The braying of aſſes, or the yelling of cats, is not more diſagreeable. The voice of the gooſe clanks and ſounds ſomewhat like a trumpet; but the gander, eſpecially when he apprehends danger to the younger brood, joined to his threatening aſpect, and the movements of his neck, hiſſes in a manner ſo formidable as deters the too near approach of children and of ſmall dogs. In the duck kind, the voices of the female and male are remarkably different. The quack of the female is loud and ſonorous; but the voice of the drake is harſh, inward, and feeble. The cock turkey, when proud, or when addreſſing his miſtreſs, blows up his wattles, erects his feathers, makes a humming noiſe by vibrating his wings, and utters a gobling kind of ſound, which, though we cannot deſcribe, is perfectly underſtood by his own ſpecies. When attacked by a boy, or any other adverſary, he aſſumes a pert and petulant tone; and ſuch is the obſtinate courage he diſplays, that he will rather die than give up the conteſt. A hen turkey, when ſhe leads forth her young brood, watches them with the utmoſt anxiety. If a hawk,

or

or any bird of prey, appear, though very high in the air, the careful and affectionate mother announces the enemy, with a low inward kind of moan. If he makes a nearer approach, her voice becomes earneſt and alarming, and her outcries are redoubled both in loudneſs and frequency. The effects of this intereſting eloquence upon the young are aſtoniſhing. They underſtand the intimidating language of the mother, though they know not the immediate cauſe of the danger; but, by the intuitive knowledge of the meaning of what ſhe ſays to them, they inſtantly employ every artifice to conceal and protect themſelves from the impending danger. To accompliſh this purpoſe, they run under hedges, bruſh-wood, and even the leaves of cabbages, and of ſuch other plants as happen to be near them.

None of our domeſtic birds ſeem to poſſeſs ſuch a variety of expreſſion, and ſo copious a language, as common poultry. A chicken of four or five days old, when held up to a window frequented by flies, immediately ſeizes its prey, and utters little twitterings of complacency; but, if a bee or waſp is preſented to it, its notes inſtantly become harſh, and expreſſive of diſapprobation, and of a ſenſe of danger. When a hen is about to lay an egg, ſhe intimates her feelings by a joyous and ſoft note; but ſhe has no ſooner diſburdened herſelf, than ſhe ruſhes forth with a clamorous kind of joy, which the cock and the reſt of his miſtreſſes immediately adopt. This tumultuous noiſe is not confined to the family, or rather ſeraglio, but is tranſmitted from yard to yard, and ſpreads to every homeſtead within hearing, till at laſt the whole village is in an uproar. When a hen has hatched a brood, a new and intereſting ſcene is exhibited. Her relation, as a mother, requires a new ſpecies of language. She then runs clucking and ſcreaming about, and ſeems to be agitated with the greateſt anxiety. When men or dogs ſuddenly approach her feeble brood, her courage and maternal care are aſtoniſhing. With loud cries, and rapid motions, ſhe aſſails the enemy: neither a man, nor a lion, in thoſe circumſtances, are ſufficient to repreſs the courage of this unarmed bird. I have ſeen a hen, when attending her young, boldly attack, intimidate, and beat off, a maſtiff. The vocabulary of the cock is likewiſe pretty extenſive; and his generoſity and gallantry are remarkable: when he diſcovers a quantity of food, inſtead of devouring it himſelf, he inſtantly calls to his concubines to partake of the repaſt; and, if he diſcerns a bird of prey, or any other alarming danger, with a warning voice, he deſires his family to be on their guard againſt the common enemy. The cock has alſo at command his love ſpeeches; and his terms of defiances. But his moſt peculiar ſound is his crowing, by which, in all ages, he has diſtinguiſhed himſelf as the countryman's clock, as the watchman who proclaims the diviſions of the night.

On the ſubject of our common poultry, we muſt not omit a curious fact, recorded by that intelligent naturaliſt the Rev. Mr. White, of Selbourne. A neighbouring gentleman had, one ſummer, loſt moſt of his chickens by the depredations of a ſparrow-hawk, that was in the practice of gliding down between a pile of faggots, and the end of his houſe, to the place where the hen-coops ſtood.

The owner, exaſperated to ſee his flock daily diminiſhing, hung a ſetting-net between the houſe and the pile, into which the unwary robber daſhed, and was entangled. Reſentment ſuggeſted retaliation: he, therefore, clipped the wings of the hawk, cut off his talons, and, after fixing a cork on his bill, threw him down among the brood-hens. Ima-

gination, Mr. White says, cannot paint the scene that ensued. The expressions excited by fear, anger, and resentment, were strange and interesting. The enraged matrons upbraided, execrated, insulted, and, at last, triumphed over, the helpless victim; they never desisted from buffeting their adversary till they had torn him in pieces.

One very singular observation remains to be made. Contrary to what almost universally takes place in the human species, the females of the inferior animals are not so loquacious as the males. This remarkable difference, if we scrutinize impartially the intentions of nature, will be found, like all other intentions, to be productive of the wisest and most beneficent purposes. Among the brute animals who pair or marry by mutual selection, and particularly almost the whole of the feathered tribes, when not corrupted by domestication, the language of the males is more extensive and more frequently repeated, than that of the females. It is for this reason, that, in purchasing singing birds, great attention is paid to those characters which distinguish the males from the females, the latter being considered as comparatively mute and useless. When the female thrush, or blackbird, is brooding over her eggs, the male sits upon a neighbouring tree; and, when no danger appears, he tells her, in melodious and encouraging strains, not to be afraid, because he is keeping the strictest watch. But, when he perceives the too near approach of men, of birds of prey, or of any other rapacious animals, he instantly changes his addresses to her. Instead of his former soothing notes, he flies from branch to branch, or from tree to tree, uttering dismal, alarming, and harsh, cries. In this manner he tells her to beware of the enemy. When the danger is greatly increased, by a still nearer approach, the male again changes his language: he then, by quick and precipitate sounds, commands her to fly, and to save herself, even in preference to her eggs or her defenceless brood.

Here the intentions of nature, as well as the necessity of a varied though limited language, are evident both to our ears and eyes; for, on such occasions, the sounds are uniformly accompanied with the most expressive gestures. When boys are about to carry off a nest of young birds, both parents, notwithstanding their natural dread of man, which is too often augmented by cruelty, make a much nearer approach than at any other time.

Their almost invincible attachment to their offspring seems, in a great measure, to deprive them of the principle of self-preservation. Their cries are low, mournful, and not unfrequently resemble those uttered by human beings when placed in similar circumstances. But when despair removes all hope, another change of language is exhibited. Both parents then fly round the assailant, screaming and uttering threatening cries; and sometimes they even attempt to repel the spoiler.

When a boy, says Dr. Smellie, I carried off a nest of young sparrows, about a mile from my place of residence. After the nest was completely removed, and while I was marching home with them in triumph, I perceived, with some degree of astonishment, both parents following me, at some distance, and observing my motions in perfect silence. A thought then struck me, that they might follow me home, and feed the young according to their usual manner. When just entering the door, I held up the nest, and made the young utter the cry which is expressive of the desire of food. I immediately put the nest and the young in the corner of a wire-case, and placed it on the outside of a window. I chose a situation in the room, where I could perceive

ceive all that ſhould happen, without myſelf being ſeen. The young animals ſoon cried for food. In a ſhort time, both parents, who underſtood the language as well as the peculiar voices of their mutual offſpring, having their bills filled with ſmall caterpillars, reſorted to the cage, and, after chattering a little, as we would do with a friend through the lattice of a priſon, gave a ſmall worm to each individual. This parental intercourſe continued regularly for ſome time, till the young were completely fledged, and had acquired a conſiderable degree of ſtrength. I then took one of the ſtrongeſt of them, and placed him on the outſide of the cage, in order to obſerve the conduct of the parents after one of their offſpring was emancipated. In a few minutes, both parents arrived, loaded, as uſual, with food. They no ſooner perceived that one of their children had eſcaped from priſon, than they fluttered about and made a thouſand noiſy demonſtrations of joy, both with their wings and their voices. Theſe tumultuous expreſſions of unexpected happineſs at laſt gave place to a more calm and ſoothing converſation. By their voices and their movements, it was evident that they earneſtly entreated him to follow them, and to fly from his preſent dangerous ſtate. He ſeemed to be impatient to obey their mandates; but, by his geſtures and the feeble ſounds he uttered, he plainly told them that he was afraid to try an exertion he had never before attempted. They, however, inceſſantly repeated their ſolicitations; by flying alternately from the cage to a neighbouring chimney-top, they endeavoured to ſhew him how eaſy the journey was to be accompliſhed. He, at laſt, committed himſelf to the air, and landed in ſafety. Upon his arrival, another ſcene of clamorous and active joy was exhibited. Next day I repeated the ſame experiment, by expoſing another of the young on the top of the caſe. I obſerved the ſame conduct with regard to the remainder of the brood, which conſiſted of four. I need hardly add, that not one, either of the parents or children, ever afterwards reviſited the execrated cage.

We have already ſeen, and every body knows, that, in general, the males of the inferior animals are more loquacious than the females. But, in the human ſpecies, it is likewiſe an unqueſtionable fact, that the females are much more talkative than the males. It is even remarkable, that female children, though of the ſame family, and receiving the ſame inſtructions and example, acquire the faculty of ſpeaking ſooner than the males.

We ſhall now endeavour to inveſtigate the intentions of nature in creating ſuch a marked diſtinction.

In all ages, and in all the regions of the earth, the early education and management of children have neceſſarily devolved upon the mothers. For this important taſk, they are much better qualified, both in the ſtructure of their bodies, and in the diſpoſitions of their minds, than the males. The connexion between the mother and child begins long before it becomes an object of attention to the father. By a thouſand circumſtances, which mothers only know, and ſometimes attempt, though obſcurely, to deſcribe, they contract an affection for a ſtill inviſible being. After the child is uſhered into the world, the curioſity and the ſympathetic joy of the father are excited. He, accordingly, exerts himſelf to render the condition both of the mother and child as happy as poſſible. To ſupport the child with a mild but nutritive food, ſecreted from the blood and other juices of the mother, Nature has provided her with a wonderfully complicated ſyſtem of veſſels, or lacteal pipes, which all

terminate in the nipples of her breaſt. To theſe nipples the infants inſtinctively apply their mouths, and, by ſuction, create a vacuum. The preſſure of the external air upon the breaſt, or collection of tubes filled with milk, forces them to diſcharge their contents into the mouth of the child, who continues to ſwallow it till its ſtomach is ſatisfied. During this tender and precarious ſtate of exiſtence, the anxious and perſevering attention of the mother, makes her cheerfully endure many toils and hardſhips, under which ſhe would often ſink, were ſhe not, on ſuch occaſions, almoſt preternaturally ſupported by mere ſtrength of affection.

After the child has arrived at the age of two or three months, and, in ſtrong and healthy children, much earlier, or as ſoon as it is capable of giving a tranſient attention to particular objects, then the exertions of the mother are almoſt perpetual. Her ſole object is to pleaſe by little amuſements, which ſhe endeavours to accommodate to the weak but gradually augmenting capacity of the infant. The chief inſtruments which ſhe addreſſes are the eyes and ears. To the eye ſhe preſents ſhining or luminous objects, with which children are very early delighted: and, at the ſame time, repeatedly mentions the names of the particular objects. Thus, by habit, the natural volubility of female tongues is greatly improved. I have often been amazed at the dexterity and quickneſs of mothers and nurſes, when endeavouring to pleaſe fretful children. They hurry the child from object to object, in order to diſcover if any of them arreſts its eye. If this attempt does not ſucceed, they have recourſe to other expedients. The ears of all infants are delighted with any loud noiſe. The mother, who wiſhes to appeaſe the fretfulneſs, or even to keep up the ſpirit and cheerfulneſs of the child, toſſes it about in her arms, ſings, and talks alternately; and, on ſuch occaſions, it is aſtoniſhing to obſerve the quickneſs of her tranſitions from one ſpecies of incomprehenſible jargon to another. Still, however, ſhe goes on, either rattling with her tongue, or making a rattling noiſe on tables, chairs, &c. A perſon who had never attended to theſe ſcenes, which are ſo often exhibited by a ſprightly mother and a ſprightly child, would be apt to conclude, that both were proper inmates for a bedlam. Theſe are well known to be univerſal facts; and we ſhall now endeavour to ſhew their utility.

It is a very ancient adage, that "Nature does nothing in vain." To women ſhe has given the talent of talking more frequently, as well as more fluently, than men; ſhe has likewiſe endowed them with a greater quantity of animation, or what is commonly called animal ſpirits. Why, it may be aſked, has Nature, in this article, ſo eminently diſtinguiſhed women from men? For the beſt and wiſeſt of purpoſes. The principal deſtination of all women is to be mothers; hence ſome qualities peculiar to ſuch a deſtination muſt neceſſarily have been beſtowed upon them. Theſe qualities are numerous: a ſuperior degree of patience, of affection, of minute, but uſeful attention, joined to a faculty of almoſt inceſſant ſpeaking.

Here, however, I muſt confine my obſervations to the laſt conſpicuous and eminent accompliſhment. To be occupied with laborious offices, which demand either bodily or mental exertions, and not unfrequently both, is allotted to the men. Theſe cauſes, beſide their comparative natural taciturnity, totally incapacitates them for that loquacity which is requiſite for amuſing and teaching young children to ſpeak. But the employments of women are of a more domeſtic kind; houſehold affairs, and particularly the nurſing and training of children, are fully ſufficient

ſufficient to engroſs their attention, and to call forth all their ingenuity and active powers. The loquacity of women is too often conſidered, by poets, hiſtorians, and by unthinking men, as a reproach upon the ſex. Men of this deſcription know not what they ſay. When they blame women for ſpeaking much, they blame Nature for one of her wiſeſt inſtitutions. Women ſpeak much. They ought to ſpeak much. Nature compels them to ſpeak much: and, when they do ſo, they are complying religiouſly with one of her moſt ſacred and uſeful laws. It may be ſaid, that ſome men talk as much as women:—granted. But beings of this kind I deny to be men. Nature ſeems to have originally made them to be women; but, by ſome croſs-accident, as happens in the production of monſters, the external male form has been ſuperinduced upon a female ſtock!

ON THE ORIGIN AND PROGRESS OF NAVIGATION.

ON the Mediterranean, navigation, firſt diſcovered in Phœnicia, the parent of Carthage, was ſoon adopted in Egypt. As to the materials and ſtructure of the inſtruments afterwards, there ſeems to have been, however, a very wide difference. The original boats in Phœnicia, appear to have been made of ſingle trees. Poſterior to rafts, on the Nile, we learn from Pliny, that, in ſubſequent times they were formed of the papyrus, ruſhes, and reeds. The invention of open veſſels is aſcribed to the Phœnicians, and the addition of the deck is given to Egypt.

From Egypt, this art, being thus improved, paſſed with Danaus into Argos, in Greece, to which he went, about 1476 years before the Chriſtian æra. There the veſſels are all repreſented to have been of a round ſhape, till the building of the famous ſhip Argo, in the city of Argos, by Jaſon, for the expedition to Colchis, in ſearch of the Golden Fleece. It was the firſt *navis longa* among the Greeks. But it gives us a poor opinion of their power and grandeur at that time; to find that the Argonauts were able to carry this wonderful and highly celebrated ſhip, afterwards ſo long preſerved with veneration, conſecrated to Neptune, tranſlated to heaven, and placed, as a conſtellation, among the ſtars, on their ſhoulders, from the Danube to the Adriatic ſea.

After rafts, and the trunks of trees ſcooped into boats, as mentioned by Virgil in the Georgics, the Roman veſſels, from being unable to procure trees at all times, of ſufficient bulk, were at firſt made of clumſy boards joined together. A Carthaginian ſhip, ſtranded on the coaſt of Italy, was the earlieſt cauſe of any conſiderable improvement in their naval architecture; but they made no figure at ſea till the firſt Punic war.

Their ſhips of war were long, and managed chiefly with oars; thoſe of burden were rounder, and driven by the wind.

Though, without much probability, the ancients, according to Goguet, aſcribed to the fins of fiſhes, and the tails of birds, the application of oars, and the helm; to the firſt of which he, himſelf, aſſigns the origin of them both, as well as of the ſail. The invention of the ſail, however, in its rudeſt ſtate, made of ſkins, is given to Æolus, and Dædalus the famous Athenian artiſt; but from whence the thought was produced, that gave riſe to the firſt boat, or ſail, ſeems neither to have been inveſtigated nor plauſibly conjectured by any author of antiquity.

The bark-logs of the native barbarians of Puerto Seguro, in Californi, when viſited by Captain Woodes Rogers, ſeem to have been almoſt preciſely the ſquirrel's bark in its primitive ſtate, as pointed out by nature, through

through the vehicle of that ſprightly and engaging animal. As alſo the Balza-logs, with one oar, of thoſe about the weſt coaſt of Terra Firma, uſed in fiſhing mantas, as deſcribed in Don Ulloa's Voyage to South America.

In ſome caſes, the boats of ſavages were actually and literally made of bark; as among the Indians, on Terra del Fuego. In New South Wales, the huts were "covered with pieces of bark and palm leaves." In New Zealand, they were "made of the bark of trees." In other places on the Pacific Ocean, their cloathing and ſails, ſometimes manufactured coarſely into mats, were of bark; and, both about the Spaniſh preſidency of Monterey, on the north-weſt ſide of America and Tchoka, on the north-eaſt ſide of Aſia, off the coaſt of Tartary, from the account of M. de la Peyr uſe's voyage round the world, lately publiſhed, it appears that in 1786 and 1787, not only garments, but even the domeſtic veſſels, were of the ſame material.

The earlieſt attempts at navigation, agreeably to the opinion of Preſident Goguet, ſeem to have been made in croſſing of rivers; though, even before the time of Noah, men had probably ventured on the ſea, ſince we find, that, by the grandſons of Japhet, "the iſles of the Gentiles were divided in their lands." Gen. x. 5.

Where the bark happened to be unfit for the purpoſe, the practicability of the art being now made evident, it was natural, by ſome means, to endeavour to ſupply its place.

Trees laid acroſs each other, bound with twigs, and covered with their branches and heath, preſented an obvious and ſtriking ſubſtitute. If pines or firs were uſed, with their ſtraight ſtems, and tough ſubdivided branches cloſely matted with evergreen leaves, they would, by a thought likely to preſent itſelf, with little contrivance, or labour, on the banks of rivers where woods are commonly found, produce at once, on a large ſcale, both the uſes and appearance of the ſquirrel's bark. One of the lighteſt of the trees would ſerve for a pole and a rudder, and another, with a ſkin tied acroſs it, for a maſt and a ſail. Before Danaus introduced navigation into Greece, according to Pliny, (l. 7. c. 56.) the Egyptians uſed rafts, which he ſays were invented by King Erythras, for viſiting the iſlands in the Erythræan (Red) Sea. Erythras was the ſon of Perſeus and Andromeda, was drowned in the ſea, probably from one of his floats, and from thence it got his name.

The ſailing balzas, or rafts made of the wood balza or puero, ſuppoſed to be the ferula of Columella, and uſed on the river Guiaquil, in Peru; inſtead of rudders, are managed by gueras or boards placed vertically, both in the head and ſtern, ſo as to be thruſt deeper or ſhallower at pleaſure; and are ſo large as to tranſport whole families to their fiſhing ſtations, with their bongoes or canoes, made from a hollowed trunk, their rude articles of furniture, and their harpoons and tackle for fiſhing with.

Another mode of ſupplying the want of ſuitable bark was by having recourſe to the tree itſelf. When employed about the bark, on its failure, the tranſition was eaſy to the trunk from which it was taken. It would evidently appear, that, by fire or tools it might be ſcooped out, ſo as to reſemble it, and, with the addition of much greater ſtrength and durability, be made to anſwer the ſame purpoſe.

Without the intervention of any thing to copy from, or of rafts, Sir Walter Raleigh ſays, "the Weſt Indians, and many nations of the Africans, finding means and materials, have been taught by their own neceſſities

neceſſities to paſs rivers in a boat of one tree." From the few things carried about with them, and their dexterity in ſwimming, however, the neceſſities of a ſavage, that cannot be ſupplied without a boat, or even a raft, do not ſeem at firſt to be very obvious. Dryden conjectures that

Some log, perhaps, upon the waters ſwam,
An uſeleſs drift, which rudely cut within,
And hollow'd, firſt a floating trough became,
And croſs ſome riv'let paſſage did begin.

But who ſhould ever think of ſetting about hollowing a log, and labour it into "a floating trough," in order to get over a rivulet! Or what rivulet could ſwim a log large enough for ſuch a purpoſe? It is ſaid, though not very credibly, that Oaſous, one of the moſt ancient heroes of Phœnicia, having met with a half-burnt tree, lopt off its branches, and, in this vehicle, was the firſt that had the boldneſs to truſt himſelf on the water. By as likely a ſuggeſtion from ſuch an occurrence, it might be alleged, that a ſavage chief on the weſtern coaſt of New Holland, having pruned his tree, hollowed out by fire for ſhelter, as there ſtill practiſed when lately viſited by Captain Vancouver, and placed a rude door as a barricade to its front, was the firſt that gave a beginning, in like manner, to civil architecture; which, from thence along the intermediate iſlands, paſſed through Aſia into the north of Europe, and into Greece, where it was improved and enriched by the elegant orders in which it now appears; that theſe, as well as the trough boat, were all pointed out by the original tree; its trunk being the ſhaft, and its top giving the capital to the different columns, by which, both the Gothic, and this more graceful and refined, though leſs awful and romantic, ſtile of architecture is diſtinguiſhed. Or, which is ſtill more terrible, that the living-cells, now to be met with in New Holland, gave their hints on the ſpot; being, at an equally early period of ſociety, to be found in Perſia, Paleſtine, where the temple of Solomon was built, Egypt, Aſia Minor, Europe, and Greece itſelf. But, however this may be, nothing is more probable than that, in common with the ſcooped-out boat, the ornaments of the eaſtern, Grecian, and Gothic, architectures, ſprang from a tree; of which that called a paſtoral column is an exact imitation; ſo that both civil and naval architecture ſeem to have the ſame Sylvian origin. The tree-pillar, and colonnade, at one time or other every where, were ſeen, to much advantage, in their priſtine ſtate, in 1787, in Maouna, one of the navigator's iſles in the South Sea, by M. de la Peyrouſe. Boats formed of hollowed trees, ſometimes of alders, were called, *alvei*, *lintres*, *monoxyla*, *ſcaphæ*, by the ancients, and ſeem to have been common. "*Germaniæ prædones*, (Pliny obſerves, l. 16. c. 40. *ſingulis arboribus cavatis navigant, quarum quædam et triginta homines ferunt.*" The ſame was the practice among the ancient Britons, their deſcendants, amongſt whom the firſt attempts in navigation evidently originated from the obſtacles which rivers threw in their way. The component parts of the word, ſignifying a boat, in the Gælic, is a ſufficient proof of theſe facts. This appears from the firſt volume of the Tranſactions of the Highland Society of Scotland, juſt publiſhed, p. 342, where it is mentioned that *biorlinn*, compounded of *bior* a ſtick, and *linne* the ſtill water of a river, "which ſignifies a boat," in the Gælic language, "points out the origin of navigation, in a very remote period of ſociety, when the ingenuity of man had proceeded no farther than to hollow out a piece of wood, in which he could barely venture to croſs over the unruffled pool of a narrow river." From Cook's voyages, and

and that of M. de la Peyrouſe, we learn, that veſſels ſcooped out of ſolid wood, frequently of a ſpecies of ſpruce fir, were general over all the Pacific Ocean, as well on the Aſiatic as American ſide. From the voyage round the world, lately made by the Diſcovery and Chatham, it ſeems, with others, that ſuch are in uſe among the ſavages about Cape Orford, on the north-weſt coaſt of America. "Their canoes, 24th April, 1792," ſays the writer of the journal, "were rudely hollowed, each from the trunk of a ſingle tree, of capaciouſneſs ſufficient to bear eight perſons, but unfit for going far out to ſea. Their garments were of ſkins of deer, bears, foxes, or river-otters." And, from the accounts of Columbus, and Sir Walter Raleigh, they prevailed as much, in their times, on the oppoſite ſhores of the Atlantic; in the Weſt Indies, as well as in Africa.

That the primitive ſail, as formerly taken notice of, conſiſted of a ſkin, is confirmed by Cæſar's account of the Veneti, in Gaul, (B. G. l. 3. 13.) who continued to uſe ſkins for ſails even in his time. Alſo from the hiſtory of Captain Cook's ſecond voyage; which, in deſcribing the miſerable inhabitants of Terra del Fuego, in the very loweſt ſtate of ſociety, 25th December, 1774, repreſents their clothing to be a ſeal's ſkin, ſcarcely covering their ſhoulders; their weapons to be bows and arrows, and harpoons made of bone, fitted to a ſtaff; their canoes to be of bark; and adds, that "they likewiſe carry in their canoes large ſeal-ſkins, to ſhelter them when at ſea, and to ſerve as covering to their huts, on ſhore; and occaſionally to be uſed for ſails." The journal farther remarks, that of all the nations this celebrated navigator has ſeen, "theſe people ſeem to be the moſt wretched."

When trees ſufficiently large could not be got, the obvious and almoſt only way of increaſing the depth and width of a boat, was to chooſe out ſmaller ones, with a proper bend; hew them down to its thickneſs, and fix them round its edge. From the journal of M. de la Peyrouſe, we find, with the addition of a covering of ſkins, that accordingly this mode is adopted by the Indians about Port de Françoiſe, on the north-weſt coaſt of America, in the formation of their canoes. In Portland iſland, in the South Sea, in 1769, Captain Cook, in the Endeavour, met with a canoe, where the bottom conſiſted of three trunks of trees joined together; thoſe of another iſland, he ſaw ſoon after, being in their original ſtate, "formed of the trunks of ſingle trees, made hollow by burning; not carved, nor in any ſhape ornamented."

After boards had, in this manner, been introduced, the original trunk dwindled down to a keel; and, the firſt advance in this new mode, of omitting the trouble of hollowing the tree, ſeems to have been, as in the Ekes, by uſing only two pieces, one for each ſide; added to the keel, and joined at their extremities. Such were the flying proas of the Marianne iſlands, "the body of the proa being formed of two pieces joined endways, and ſewed together with bark," as deſcribed in Lord Anſon's voyage. Such alſo were the canoes of New Zealand, ſeen by Captain Cook in 1770, which were ſteered by two men, having each a paddle, ſitting in the ſtern, and of which "each ſide was formed of one entire plank, about 12 inches broad, and about an inch and a half thick, fitted to the bottom part with equal ſtrength and ingenuity."

Beyond this, the conſtructing a boat of rows of additional planks, cloſely united, one above another, from the keel to the gunwale, was but a ſhort ſtep, and thus far only the Romans ſeem to have come; for till then they had no ſhips, when the Carthaginian veſſel was ſtranded on their coaſt.

In

In ſome places another thought very generally aroſe about the ſame time with the hollowed tree; either from the ſcarcity of wood, or from the occupations of ſuch nations as were commonly employed in hunting and fiſhing. They formed their boats of bent branches with baſket-work, and, inſtead of planks, covered them with the ſkins of land animals or ſeals. This mode was beſides attended with this obvious advantage, that, being lighter than boards, and more eaſily applied, it rendered them more ſuitable to their wandering lives and employments. They could carry them over land from one river or lake to another, and the materials of which they were conſtructed were furniſhed by their occupations. Doubtleſs, for ſimilar reaſons, the tents or cabins uſed by the Indians, on the weſt coaſt of Hudſon's Bay, as mentioned in Mr. Ellis's voyage for the diſcovery of a north-weſt paſſage, were formed in the ſame manner, being "covered with morſe and deer ſkins ſewed together;" as were alſo their bodies, with thoſe of the "deer, otter, and beaver." Beſides thoſe of the Eſkimaux, and other rude nations, of this kind the boats of the ancient Britons are deſcribed to have been by Cæſar and Pliny.

Lord Kames, in his Sketches of the Hiſtory of Man, advances the following, though unſupported, theory on this ſubject, with much confidence: "With reſpect to naval architecture, the firſt veſſels were beams joined together, and covered with planks, puſhed along with poles, in ſhallow water, and in deep water drawn by animals on the ſhore. To theſe ſucceeded trunks of trees cut hollow, termed by the Greeks monoxyles. The next were planks joined together in form of a monoxyle. The thought of imitating a fiſh advanced naval architecture. A prow was conſtructed in imitation of the head, a ſtern, with a moveable helm, in imitation of the tail, and oars in imitation of the fins: ſails were at laſt added, which invention was ſo early, that the contriver is unknown." To ſome, however, it may not, without evidence, be altogether clear, that men, in ſo barbarous a ſtate as not even to have trunk boats, but only "beams joined together, and covered with planks;" ſhould have tackle, proper ſide tracks, as on a Dutch canal, and domeſticated animals trained to the draught, ſo as that "in deep water" theſe rafts, here called "veſſels," ſhould be "drawn by animals on the ſhore." Neither is it obvious, that before the invention of ſails, the "contriver" of which Dædalus, at leaſt among the Greeks, is not "unknown," "the thought of imitating a fiſh advanced naval architecture." For the firſt boats on the Mediterranean are ſaid to have been round; and all the accounts we have of the many ſavage nations in the world, even of thoſe acquainted with the uſe of ſails, from the time of Columbus to that of Captain Vancouver in 1795, repreſent the ſhape of their veſſels, with the methods of ſteering and paddling, as altogether different from the appearance and management of the body, tail, or fins, of any fiſh that ſwims; with thoſe figures, or operations, even were thoſe of their fins, when in the water, conſpicuous, any farther than as articles of food, they probably never thought it concerned them to take up their attention. The conceit, in the latter part of this theory, is notwithſtanding repeated from the opinions both of the ancients, and of M. le Preſident de Goguet; which makes it the more remarkable, as having paſſed, unchallenged, through ſo much genius and diſcernment.

If we either chooſe, in this inſtance, to throw off the fetters of antiquity; or, diſdaining to lie under an obligation to an inferior animal, to have recourſe to accident, altogether unaſſiſted by imitation; the moſt plauſible account, from the various facts of which we have received diſ-

tinct information, of the rife and progreffive beginnings of this aftonifhing art, is, perhaps, the following one.

The firft attempts at navigation feem evidently to have been made for the purpofe of croffing rivers, or, perhaps, of landing on a neighbouring ifland from the border of a lake. As it is on the banks of rivers and lakes that woods are chiefly to be met with, it would frequently happen that trees and branches, fometimes lying acrofs each other, and entangled and covered with twigs, and matted with leaves, would be carried down the ftream, almoft every flood, till they were either launched into a lake, or loft in the fea. It is to fuch fituations, likewife, as the warmeft, and moft convenient for hunting, fowling, and fifhing, that men ufually refort. But no fooner had a favage from his hut obferved one of thefe natural rafts drifting along; and, from curiofity, or fome other motive, had overtaken it by fwimming; or had ftopped it whilft caught by a rock, or whilft lingering on a pool; than he would immediately find, that by means of one of the lighteft of the trees, ufed as a pole, he could not only avoid the neceffity of fwimming from one fide of the river to the other, but could tranfport, with much more eafe, on fuch a vehicle, both his weapons over the river, and his fpoils on returning. Alfo that he could fifh more fuccefsfully when thus carried about, than when confined to the fhore. Thefe natural rafts are the floating iflands of which there are fo many fabulous traditions, from the wifh to excite furprize, and a love for the marvellous, efpecially among thofe of an unimproved ftate, around every lake, which has wood on its borders, or on the banks of the ftreams by which it is fed. Climbing plants, fuch as the vine or the honeyfuckle, would bind the copies of thefe natural rafts together; twigs, leaves, and heath, or fkins, would furnifh floors; and young pines, or firs, would make excellent poles for pufhing them forward. When Lord Kames fuppofed the firft rafts were laid with planks, he was certainly thinking of people in a more civilized ftate than thofe of whom he was writing.—As it would often happen, with fuch rude bindings, that the pieces, of which thefe primitive rafts were compofed, would not be very ftrongly united, the whole platform would, in fpite of every effort to keep it together, from various caufes, in numberlefs inftances, fly afunder, feparate, and difperfe. On meeting with fuch an accident, the pilot would naturally keep by one of the largeft of the beams, and endeavour, with his pole, to fupport himfelf upon it, independent of the reft. That this is agreeable to fact, is evident from the account of Don Ulloa's voyage to South America. "The veffels ufed upon this river (Guiaquil)," fays the writer, "are chatas, canoes, and balzas, or rafts, a name which fufficiently explains their conftruction, but not the method of managing them, which thefe Indians, ftrangers to arts and fciences, have learned from neceffity."

Thefe balzas, called by the Indians jangadas, are compofed of five, feven, or nine, beams, of a fort of wood, which, though known here only by the name of balza, the Indians of Daren call puero; and, in all appearance, is the ferula of the Latins, mentioned by Collumella. It is a whitifh foft wood, and fo very light, that a boy can eafily carry a log of it, three or four yards in length, and a foot in diameter. Thefe beams are faftened, or lafhed together, by bijucos, and fo fecurely, that with the crofs pieces at each end, which are alfo lafhed with all poffible ftrength, they refift the rapidity of the currents, in their voyages to the coafts of Tumbez and Paita. The Indians are fo fkilful in fecuring them, that they never loofen, notwithftanding the continual agitation; though,

though, by their neglect in examining the condition of the bajucos, whether they are not rotten or worn, ſo as to require others, there are ſome melancholy inſtances of balzas, which, in bad weather, have ſeparated, and by that means the cargo loſt, and the paſſengers drowned. With regard to the Indians, they never fail of getting upon one of the beams, which is ſufficient for them to make their way to the next port.

From ſuch occurrences, and involuntary experiments, finding it thus practicable to ſupport and balance themſelves upon a ſingle beam, without the labour and materials requiſite for conſtructing a compound raft; where it was unneceſſary to tranſport articles of bulk from one place to another, and eſpecially in fiſhing, when quickneſs of motion and conveyance was of importance; people gradually and naturally took to the ſingle-tree raft, if it may ſo be called, with one oar; alſo uſed on the weſt ſide of the ſame continent, in the bay of Manta, not far diſtant from Guiaquil. The one oar ſeems to have been nothing elſe, as indeed oars are to this day, but the original pole, flattened at one end, to catch the water, and uſed as a paddle.

"The bay of Manta," ſays the ſame account, "was formerly remarkable for a conſiderable pearl-fiſhery, but it has been diſcontinued for ſome time," previous to the 9th March, 1736, "the inhabitants not having ability to purchaſe negroes for carrying on this fiſhery. The bay has probably its name from the great quantity of mantas in thoſe parts, the Indian inhabitants being generally employed in taking that fiſh, which they ſalt and carry to the inland provinces. The Europeans cannot help admiring their dexterity in this kind of fiſhery, which they carry on in the following manner: they throw into the water a log of wood, ſuch as they uſe in making a balza, being about five or ſix yards in length, and near a foot in diameter. This log will be ſufficient to ſupport the weight intended, which conſiſts of a net lying acroſs one end of it; and, the Indian, ſtanding in an erect poſition, on the other. On this tottering veſſel, aſſiſted by only a ſingle oar, he puts off to ſea, about the diſtance of half a league, where he ſhoots his net. Another Indian follows him on a ſimilar log, takes hold of the rope, faſtened to one end of the net, by which means the whole is expanded, and both the Indians move towards the land, where their partners wait to draw the net on ſhore. In this occupation the dexterity and agility of the Indians, in maintaining an equilibrium on round logs, is truly amazing; for the continual agitation of the ſea renders it abſolutely neceſſary for them to be continually changing their poſition, and making different motions with their bodies: and what ſtill heightens the difficulty is, that the Indian is at the ſame time obliged to mind both his oar and his net, in drawing it towards the land. They do indeed ſometimes, though very ſeldom, ſlip off their logs; but, being excellent ſwimmers, they recover their bark, and, in an inſtant, place themſelves in their former poſture."

Such were alſo the bark-logs ſeen on the coaſt of California by Captain Woodes Rogers, of which the following ſhort account is given:

"They left the iſland of Tres Marias on the 25th of October, 1709, and ſteering to the north, on the 26th ſent the bark on the ſhore of Puerto Segoro, in California, in ſearch of water. The men ſaw ſome Indians, who paddled to them on bark-logs, but were at firſt afraid of coming up to them; but, being prevailed on to accept a knife or two, and ſome baize, they gave them in return a couple of live foxes, a deer-ſkin, and two bladders of water.

On the 29th, ſome of the crew ventured on ſhore on bark-logs; for the ſea was ſo high they did not dare to attempt landing with their boats. Upon this occaſion, the good-natured Indians leaped into the ſea to guide the bark-logs; and, on their getting aſhore, the Indians led each of the Engliſh up the bank, where was an old man, who had a deer ſkin ſpread upon the ground, on which they kneeled before the Engliſh, who followed their example, and kneeled too; the Indians then wiped the water off the faces of the Engliſh with their hands. The ceremony being ended, each of the ſailors, ſupported by two of the natives, was led ſlowly through a narrow path to their huts, where they were welcomed by a very dull kind of muſic.

The men were naked, and the women have only a ſhort petticoat, made of ſilk-graſs, deer-ſkins, or thoſe of pelicans, which do not reach to the knee; ſome of them wear pearls about their necks, having firſt notched them round, and faſtened them with a ſtring of ſilk-graſs. The men are ſtraight and well limbed, live by fiſhing and hunting, and have a greater value for European knives, ſciſſars, and nails, than for gold and ſilver. They have long black hair, and are of a dark brown complexion. Their arms are bows and arrows, with which they are excellent markſmen, and will ſhoot a ſmall bird flying. The women, who are far from being handſome, employ themſelves in gathering and grinding grain on a ſtone, and in making of fiſhing lines. They are an honeſt people, would not take the leaſt thing without leave, and were willing to aſſiſt the Engliſh in filling the water, and to ſupply them with whatever they would procure."

For the ſake of extending their breadth, and of ſtanding or ſitting with greater eaſe, firmneſs, and ſafety, on theſe logs; they would ſoon come to be flattened on the upper ſide, and ſharpened below with ſuch inſtruments as were to be had: and alſo contracted to a point at each end, ſo as to be puſhed either way, with leſs oppoſition, and more celerity.

The hollowing the upper ſide of the log, to prevent any article the hunter or fiſher wiſhed to carry with him, from falling over, now became an obvious and ſtriking thought, ariſing of itſelf; and, by finding its capacity and convenience thus ſo aſtoniſhingly increaſed, would lead to the formation, by fire or tools, of the tree boat, wherever the beam or trunk was of ſufficient ſize to admit of its being made into one; and, through it, as already traced, to that of veſſels of a more complex ſtructure. In Don Ulloa's ſatisfactory and entertaining narrative, we find, that, "the barks employed on the river Chagare, near Panama, in the Iſthmus of Darien; between Guiaquil and Manta bay, where balzas and balza logs; and California, where bark-logs were uſed: "are of two kinds, the chatos and bongos. The former are like the European veſſels, compoſed of ſeveral pieces of timber, but of a greater breadth, that they may draw but little water; they carry from ſeven to eight hundred quintals. The latter are formed out of one piece of wood, and it is aſtoniſhing to think there ſhould be trees," from another place uſually cedars, "of ſuch a prodigious magnitude, ſome of them being eleven Paris feet broad, and carry conveniently four or five hundred quintals." And at cape Orford, in New Albion, on the other ſide of California, as already mentioned, Captain Vancouver, within theſe few years, found canoes "rudely hollowed, each from the trunk of a ſingle tree." So that on the coaſts and iſlands of the Pacific Ocean, from whence we have learned, eſpecially when joined to that from the eaſtern ſide of the New Continent, more authentic and valuable information,

mation, as to the true appearances of mankind in a ſtate of nature, than from all the fabulous and real accounts of antiquity combined; we have, at one view, the whole progreſs of navigation in its firſt ſtages: from the balzas or rafts on the river Guiaquil, in South America, perhaps coeval with thoſe on the Nile, on the other ſide of the Atlantic, to the improvements on the tree boat, equally common on the Old Continent, obſerved by M. de la Peyrouſe, about Port de François, almoſt at the oppoſite weſtern extremity of North America.

In the courſe of navigation the original raft or log, when the pole was too ſhort to reach any particular part of the bottom of the river or coaſt, the only poſſible way of acting upon it, and which would be followed without any previous contrivance, was by preſſing the end of the pole, ſince it could not make the ground, againſt the water, and, by repeating theſe inſtinctive efforts as quickly as poſſible, to ſtruggle or paddle it on, till the bottom was again within reach of the pole. This would ſhow, that the raft, or log, could be impelled forward without the aſſiſtance of the ground, and would naturally lead to the flattening the extremity of the pole, that it might include more of the water in its breadth, and, by encreaſing the oppoſition, be applied in directing it with the greater effect. This ſuperſedes the neceſſity (as in the theory formerly alluded to) of furniſhing ſavages with tackle, towing paths, as on an improved navigable canal, in a great commercial country, and domeſticated "animals on the ſhore," with which to draw their rafts "in deep water;" and, is beſides both conſiſtent and agreeable to hiſtory. Almoſt the only uſe of water-carriages, to people in a rude ſtate, and which ſeems firſt to have led to their adoption, is to remove the obſtacles which rivers preſent, and not to go along, but to get over them; yet, in this very material caſe, "in deep water," as "animals on the ſhore," even where the banks were ſuitable for drawing, could be of no ſervice, it is there entirely left to the reader's own ingenuity to find out what was to be done.

We are informed that the canoes on the South-Sea are brought to a point at both ends; either of which is the prow indiſcriminately. The flattened pole is the ſingle oar of the balza-log, on the weſt coaſt of South America, uſed when ſtanding. This, when ſhortened for the accommodation of ſitting, became the paddle of the bark-log at California, on the ſame ſide of North America; and of all the tree-boats and canoes conſtructed afterwards.

Paddles, thus ariſing out of the common courſe of incidents, and, as it were, appearing neceſſarily, and of themſelves, were applied without any alteration of form both to the uſes of the oar and the helm. "The Indians of theſe iſlands," the Ladrones, ſays the writer of Lord Anſon's voyage, "are a ſtrong, well-limbed, and bold people, and, from ſome of their practices, ſeem to be no ways defective in underſtanding; for their flying proas, which for ages paſt have been the only veſſels they have employed, are a very ſingular and extraordinary invention, and are ſaid to be capable of running with a briſk trade-wind near 20 miles in an hour. The head and ſtern of the proa are exactly alike; but her two ſides are very different. That intended to be always the lee ſide being flat, whilſt the windward ſide is built rounding, in the manner of other veſſels; but as her ſmall breadth, and the ſtraight run of her leeward-ſide would infallibly make her overſet, a frame is laid out to the windward, to the end of which is faſtened a hollow log, formed like a ſmall boat. The weight of the frame is deſigned to balance the proa; and the ſmall boat,

boat, which is always in the water, to prevent her overſetting to windward. In ſhort, the body of the proa is formed of two pieces joined endways, and ſewed together with bark; for no iron is uſed in her conſtruction. She is about two inches thick at the bottom, which at the gunwale is reduced to leſs than one. The proa generally carries ſix or ſeven Indians, two of whom are placed at the head and ſtern, who ſteer the veſſel alternately with a paddle, according to the tack ſhe goes on, he in the ſtern being the ſteerſman. The other Indians are employed either in bailing out the water, which ſhe accidently ſhips, or in ſetting and trimming the ſail. Theſe veſſels ſail moſt excellently on a wind, and, with either end foremoſt, run from one of theſe iſlands to the other, and back again, only by ſhifting the ſail, without ever putting about; and, by their ſmall breadth, and the flatneſs of their lee ſide, are capable of lying much nearer the wind than any other veſſel hitherto known."

The following account of the veſſels of New Zealand, in 1770, is given in the journal of Captain Cook's firſt voyage.—"The canoes of this country are not unlike the whale-boats of New England, being long and narrow. The larger ſort ſeem to be built for war, and will hold from thirty to one hundred men. One of theſe, at Tolaga, meaſured near ſeventy feet in length, ſix in width, and four in depth. It was ſharp at the bottom, and conſiſted of three lengths, about two or three inches thick, and tied firmly together with ſtrong plaiting, each ſide was formed of one entire plank, about twelve inches broad, and about one and a half inches thick, which were fitted to the bottom, with equal ſtrength and ingenuity. Several thwarts were laid from one ſide to the other, to which they were ſecurely faſtened, in order to ſtrengthen the whole.

"Theſe veſſels are rowed with a kind of paddles, between five and ſix feet in length, the blade of which is a long oval, gradually decreaſing 'till it reaches the handle; and the velocity with which they row with theſe paddles is really ſurpriſing. The veſſels are ſteered by two men, having each a paddle, and ſitting in the ſtern; but they can only ſail before the wind, in which direction they move with conſiderable ſwiftneſs.

"Theſe Indians uſe axes, adzes, and chiſſels, with which laſt they likewiſe bore holes. The chiſſels are made of jaſper, or of the bone of a man's arm; and their axes and adzes of a hard black ſtone. They uſe their ſmall jaſper tools 'till they are blunted, and then throw them away, having no inſtrument to ſharpen them with.

"Their warlike weapons are ſpears, darts, battle-axes, and the patoo-patoo."

Beſides ſhewing that at firſt there was no ſuch thing as a rudder, diſtinct from a paddle; the ſtructure of theſe veſſels tends likewiſe to prove the futility of the fancy ſo long implicitly followed, that, "the thought of imitating a fiſh advanced naval architecture;" to which neither of them have the moſt diſtant reſemblance. The "ſides" of the proa are "very different" from each other; the head and the ſtern are "exactly alike," ſailing equally well, either end foremoſt; and they have two ſteerſmen, one at each extremity, who, over its ſides, ſteer the veſſel "alternately," with a "paddle:" whilſt the New Zealand canoes are ſteered by two men, having each a paddle, ſitting both in the ſtern. In a ſomewhat ſimilar manner were probably navigated the primitive hollowed boats in other parts of the world, without a helm.

When the paddlers were fatigued, or wiſhed to relieve their arms, the only way of doing ſo was to reſt the ſhaft of the paddle on the edge

of

of the boat, ſo as throw on it part of the weight, and eaſe the exertion. In the courſe of repeating this it would ſoon appear, that by truſting it entirely to the ſide of the veſſel, the arms would both be freed of the unneceſſary load of the paddle, and would thus be enabled to apply their whole ſtrength towards accelerating the motion of the canoe. On finding this, the making a notch in the gunwale for the handle to lie acroſs, and pulling in an oppoſite direction, with the face looking aft, was all that was requiſite to convert a paddle into an oar.

The ſteering paddle, likewiſe, being, from weakneſs or indolence, reſted over the ſtern, and managed in the ſame way as when we ſtill frequently direct a cock-boat, or ſculler, with one oar, or when we make it ſimply a ſubſtitute for a rudder, in ſteering a yawl, ſoon got a crook in the handle, that it might be held eaſily when ſitting, without raiſing the blade out of the water; and, being hung by thong loops, on a couple of pegs, to prevent it from ſhifting, became inſenſibly a diſtinct appendage to a veſſel, under the name of a helm.

After theſe improvements, it being diſcovered that a row-boat, if long, has a ſort of reſemblance to ſome kinds of fiſhes; frequently ſeen near it, and connected with the ſame element; the notion that its form and management was furniſhed by them at firſt, was at once inconſiderately adopted, and, has ſince, no doubt, from the ſuppoſed infallibility of the ancients, being boldly repeated; although the fins of fiſh in water are ſo far from being likely to ſtrike the attention of a ſavage, that they are ſcarce viſible, or their movements diſcoverable, on cloſe inſpection. The tail was likewiſe ſo far from having any connection with the origin of the rudder, that the balzas or primitive rafts were managed, inſtead of a helm, by boards placed vertically at the head as well as the ſtern, and puſhed deeper or ſhallower, as circumſtances required, like the paddles uſed, ſubſequently, by the pilots at the extremities of a canoe.

Excluding the ſhorter proceſs of direct imitation; the gradual diſcovery of the ſail, without any great effort of genius, worthy, either of an Æolus or a Dædalus, or of a ſearch into another element for the dorſal fin of a fiſh, as Mr. le Preſident de Goguet ſuppoſes requiſite, may apparently be traced with equal congruity. A man would hardly have begun to puſh along his new acquiſition of the raft over a pool beyond his own depth, when, in the courſe of ſtanding up to look about him, or whilſt pauſing for reſt, he muſt have noticed, that the wind, acting upon his body, made the float glide forward in its own direction. On this being obſerved, if the wind blew favourably, his love of eaſe would ſoon ſhow him that he might ſave himſelf the trouble of uſing his pole; and that the more he increaſed his bulk, the more wind he oppoſed, and the faſter the raft moved. The means and material being at hand, the readieſt way of increaſing his ſize was by ſpreading out his ſkin mantle, ſo far as to form a kind of yard of his arms. This producing the deſired effect, he would naturally endeavour to continue it, without the neceſſity of doing duty himſelf, and it would at once ſtrike him, without much ingenuity, that his pole, or another like it, might ſupply the place of his body, and a branch fixed acroſs it that of his arms, whilſt a larger ſkin would collect more air than his mantle, and thongs would do for ropes and bindings. Hence, by degrees, would the moſt common occurrences lead to the ſail, the yard, and the maſt. When the wind oppoſed him, he would have recourſe to his pole; and, when favourable, would indulge

dulge himſelf with the luxury of reſt; by hoiſting his ſail on his maſt and yard, always kept erected, and ready to receive it. The primary rafts on the river Guiaquil, in Peru, ſuppoſed by the ingenious author of the Sketches of the Hiſtory of Man, to be the firſt inhabited part of America, were managed by a ſail.

The reſemblance between the Guiaquil, and the Nile on the Old Continent, in ſeveral particulars, is curious and remarkable. The poor, untaught, ſcarcely human, natives of Terra del Fuego, carry in their canoes "large ſeal-ſkins" "occaſionally to be uſed for ſails." And even the veſſels of New Zealand, in 1770, could "only ſail before the wind." It is not, however, by any means clear that "ſails were at laſt added," agreeable to the theory in the Sketches; ſince in the natural progreſs of ſuch events as have been pictured, and were likely to give it birth, it may have been diſcovered prior to the oar and the helm, and only poſterior to the raft and the pole.

Theſe inquiries have imperceptibly extended themſelves to a much greater length than was expected. They do not pretend to the diſcovery of the origin of navigation, but only by aſcertaining the firſt appearances of the art, and delineating the various paths that have been followed, to endeavour to point out ſome others leading towards the fountain-head, attended with fewer obſtacles and difficulties than any of the preceding ones. Like thoſe into the place of Homer's birth, ſuch inveſtigations unqueſtionably derive much of their conſequence from the importance of the ſubject with which they are connected. In making them, however, a perſon becomes intereſted in the authenticated hiſtories of his own ſpecies in the earlieſt ſtages of ſociety, and is unavoidably ſtruck with the uniformity of the contrivances of mankind, in a ſtate of nature, over the whole earth; however diſtant either in time or place, the different hordes, tribes, or nations, may be from each other. The log, the raft, the tree-boat, and bark ſail;—the clay bark, and wicker hut, thatched with bark, leaves, or ſtraw;—the bark or ſkin covering, for a part or all of the body;—the club; the ſpear ſharpened at the extremity, and hardened by fire, or pointed with bone;—the bow, and arrows headed with flints;—the ſtone axe;—the fiſhing-hook of ſhell; where trees are fewer, and the climate colder, the ſkin hut, boat, ſail, and cloathing;—and, in every ſituation where wood or flint is to be had, the production of fire, by friction or colliſion, are all ſo invariably adopted, that one is almoſt inclined to think, men, in a rude ſtate, are led to theſe by inſtincts, ſimilar to thoſe of the inferior animals. Rafts ſprang up equally on the Nile and the Guiaquil. Wherever trees are to be met with, even bows and arrows, trough-boats, and fires, produced by friction, though not the moſt apt inventions to occur to an uncultivated mind, are to be ſeen likewiſe; and the human race ſeem to be inſtigated to reſort to them by a natural impulſe, ſomewhat reſembling that which directs the wonderful operations of the ſquirrel, the bee, or the beaver.

But, whether accident; invention, the offspring of neceſſity; inſtinct, or the imitation of inſtinct, has given riſe to them; ſuch were the rudiments, the ſmall beginnings, of navigation! an art which has given a new character to the modern world, by which it has riſen to an infinitely higher degree of civilization, ingenuity, and happineſs; and, which has ſhielded the independence, and produced the ſuper-eminent wealth and glory, of Great Britain in particular.

ESSAY

ESSAY on LANDSCAPE GARDENING.

NATURAL taſte is the foundation of all pictureſque embelliſhment. To ſeize the grand outline with the mind's eye, to adapt the deſign to the predominant features in the landſcape, to unfold the beauties of nature by the maſterly touches of art, is the ſublime province of the ornamental compoſer of rural ſcenery.

That this ſcience has been cultivated with the greateſt ſucceſs in this country, even jealouſy and national vanity will not pretend to deny. Foreign writers, diſtinguiſhed for their taſte, have allowed the Engliſh the pre-eminence in landſcape and ornamental gardening; and that they were the firſt who emancipated themſelves from the trammels of prejudice; and, recurring to Nature, which had long been baniſhed from the ſeats of the great, invited her to her deſerted abodes, and gave her a new and impoſing aſpect.

Kent ſaw the incongruity of artificial deſign. The ſtraight walk, the clipped hedge, the tortured yew, ſunk beneath the ſuperior chaſtity of his taſte. He made as much progreſs as an innovator, who had a prevailing bad taſte to contend with, could be expected to do. Perhaps his own was not quite correct. One age ſeldom unfolds an idea, and brings that idea to perfection. We have had ſchools of painting as well as of ornamental ſcenery. Some maſters were diſtinguiſhed for one excellence, and ſome for another. The force of genius has, at intervals, prevailed over diſadvantages, and produced works to be admired, though not in every reſpect deſerving imitation. Reynolds, with a mind enlightened by ſcience, and chaſtiſed by taſte, embodied the form, and caught the character, which he tranſfuſed into the colouring on the canvas. He grouped—he combined. He followed nature, and therefore ſucceeded; but he had great artiſts among his predeceſſors, who paved the way for the attainment of excellence.

It was not thus with pictureſque embelliſhment. The ſcience was comparatively new; and where attempts had been made, they were, in general, conducted on a wrong plan, or proceeded from a vitiated taſte.

Kent had every obſtacle in his way; yet he accompliſhed much; and gratitude is due to him who deviates from a wrong path, and aſpires to perfection, though he may not reach her temple.

To Kent ſucceeded Brown—a man originally bred a gardener; and, from this fortuitous circumſtance, without a particle of his genius, every perſon who can ſuperintend a kitchen-garden, or handle a ſpade, has thought himſelf qualified to quit his ſphere, and attempt deſign. But Brown poſſeſſed an originality of conception, a poet's eye, and an inſtinctive taſte, for rural embelliſhment. He was at laſt animated and inſpired by ſome of his own creations.

He ſaw the deformity of perverted beauty with keener optics than Kent—he viewed Nature with the enthuſiaſm of a lover; and though it cannot be denied, that he ſometimes tricked her out in meretricious ornaments, and patched her with unmeaning clumps, he never loſt ſight of her prominent charms, and his worſt errors are only like minute pimples on a beautiful face.

We have, however, ſeen this mighty maſter of pictureſque embelliſhment ſeverely cenſured by ſome of his own countrymen, who, indulging too much in the viſions of theory, have denied him the merit of practical excellence. Becauſe Brown could execute better than he could deſcribe, and worked by ſelf-taught rules, he has been attacked with

aſperity; and ſome of his moſt capital performances have been aſcribed to chance, or to a dereliction of his own principles.

But who can reduce the infinite variety of ſituations that are to be improved to any ſyſtematic principles? The powerful genius of a place will imperiouſly ſet rules at defiance; and, in fact, Art can only be the handmaid of Nature, whoſe beauties, preſenting a boundleſs variety, are alike indignant of confinement and controul.

The attempt at ſyſtem is only an effort to bring us back to what has juſtly been explored. I have no magical ſkill in planting roſes, ſays Gray. Nature diſdains the fetters of art. The beſt principles can never be univerſally applicable to all ſituations in an equal degree. The painter may invent or reject at pleaſure, and adhere to the rules of his art: the embelliſher of landſcape is more confined in his operations; he cannot always reject—he can only improve. His invention may cover ſome defects; but it cannot always command the excellencies he might wiſh. Beſides, a flat ſurface and an extended natural ſcene are very different materials to work on, and will have very different effects when viewed by the eye of natural taſte, the only juſt criterion of rural embelliſhment.

The chef d'œuvre of Brown was the improvements at Blenheim. He had the nobleſt field to diſplay his talents on, and he did not labour in vain. But though he traced the outline with effect, the correct taſte of the noble poſſeſſor of this magnificent place has enabled him to give it many additional touches, and to improve its drapery. He has, however, preſerved the unity of the deſign, and only heightened the colouring. Who that now viſits theſe picturesque ſcenes can deny, but that plantations have been applied to all the principal purpoſes which M. De Girardin, perhaps copying from his beloved Ermenonville, conceives ought to be their grand objects:

"To form the perſpective or ſide-ſcenes of the fore-ground that may beſt connect the diſtances with the principal points of view. To raiſe ſuch elevations or ſcenes as may give relief even to an abſolute flat. To hide all diſagreeable objects. To give more extent to thoſe that are pleaſing, by concealing their terminations behind a maſs of wood; by which means the imagination continues them beyond the point where they are ſeen. To give an agreeable outline to all ſurfaces, whether of land or water."

Theſe are the ideas of a maſter; and we here ſee them realized. They who think juſtly, in matters not under the influence of paſſion, will generally think the ſame: hence often coincidence without intention. But, while Brown has been too indiſcriminately condemned, he has alſo been too laviſhly praiſed, where he is leaſt defenſible. His clumps muſt, in many caſes, be given up by his moſt zealous partizans, or receive a degree of connexion by intermediate planting, as has been done at Blenheim, to preſerve the uniformity of the ſcene. His unvarying circular belts too, where they are not broken into maſſes, as we ſee them here, and when they ſerve to exclude the proſpect of the ſurrounding country, are real defects in picturesque beauty. No kind of property is leſs the object of envy, or more grateful to the eye, than to take poſſeſſion of a country in an extenſive view: it contributes to the general beauty, and is equally enjoyed by all, without offence to any. That diſplay of nature is certainly moſt magnificent, which is bounded only by the horizon: where ſcenes under the immediate view preſent the moſt captivating charms, and where diſtance harmonizes with the fore-ground.

COW-

COW-KEEPING IN SWITZERLAND.—*Continued from p. 60.*

THE district of Innerooden, in the canton of Apenzel, nourishes, during the summer, upwards of 15,000 head of cattle of every description, but a much smaller number during the winter. The meadows do not furnish a sufficient quantity of hay to maintain all the cattle in winter, which, during the summer, find plenty of food in the pastures, and on the Alps in this district. Great numbers of cows, sheep, goats, and pigs, are, therefore, purchased in spring, and sold again in autumn with considerable profit.

The rearing of black cattle is by far the most considerable and most important branch of the rural system of the inhabitants. During the summer, 9000 cows are grazing on the Alps of Innerooden, of which number 6000 only remain in the country for the winter. The cow-keepers in Apenzel find it more profitable to sell their cow-calves to the inhabitants of St. Gall, and other cities, than to rear them. Every spring they purchase in the markets of Bregentz, Hohenembs, Feldkirch, and Pludentz, as many cows as they want, in addition to those which they maintain during the winter, duly to improve their Alps. Independent of their being thus relieved from the care and trouble of bringing up the calves, they also gain more in this manner, as, during the whole summer, they enjoy the milk of the cows thus purchased; and, on selling them again in autumn, they receive as much, nay, frequently more, money, than they paid for them; for the cows return from the Alps in a better condition than they are brought thither in the month of May. Poor Alp-holders, who are not possessed of sufficient money to purchase cows, endeavour to farm some, for the summer, out of the neighbouring Austrian dominions, or the districts of Sargan, Say, and Thurgan; the number of cows thus farmed and pastured on the Alps of Innerooden amounts to from 900 to 1000 head, which are comprised under the 3000 that are every spring brought into the country.

The 9000 cows, which, during 25 weeks, find sufficient pasture on the Alps of Innerooden, yield the most important produce of the country, and which, in every point of view, deserves a more particular notice.

Many cows yield daily from five to six gallons of milk, while they are grazing on the Alps; but the average produce is five and a half gallons a day: a gallon of milk weighs about five pounds one quarter troy weight. Every cow yields, therefore, upon an average, during the 25 weeks of pasture, 950 gallons of milk. Experience has shewn, that the cow-keepers, in general, make five pounds of fat or cream-cheese, out of 20 gallons, or 103 pounds, of milk; and one pound of butter, and two pounds of common cheese, (a pound containing 20 ounces,) out of seven, eight, to nine, gallons of milk, according to its different qualities.—Butter fetches from 15 to 22 kreutzers a pound; the medium price is 18 kreutzers. Common cheese costs four kreutzers; and cream-cheese from eight to nine kreutzers a pound; fifty pounds of cream-cheese are, therefore, equal in value to 18 pounds of butter, or 32 pounds of common cheese, and produce from 7½ to 8½ florins. If the price of fifty pounds of cream-cheese, or of the above quantity of butter and common cheese, rises as high as ten florins, this is thought an uncommon event, which never happens but in times of extraordinary scarcity, such as the year 1735.

From theſe data it is evident, that the cow-keepers prepare, out of the milk-produce of every cow, during the 25 weeks of paſture, either 262 pounds of cream-cheeſe, from 40 to 50 florins, or 131 ditto of butter, and 262 ditto common cheeſe, from 57 to 60 florins.

The Apenzel cow-keepers reap, therefore, more benefit from making butter and common cheeſe, than from preparing cream-cheeſe out of the milk of their cows: for this reaſon, the two former articles are generally manufactured throughout the diſtrict of Innerooden, in preference to the latter. The cow-keepers, on boiling the milk, and preparing the cream-cheeſe, obtain, it is true, a ſecond precipitate, that is, a ſort of meagre cheéſy ſubſtance, which the Swiſs call *zieger*; but this is inconſiderable: for, on making 262 pounds cream-cheeſe, they obtain about 50 pounds zieger, which being ſold for four kreutzers a pound, fetch only 3½ florins, ſo that the profit on butter and common cheeſe exceeds the proceeds of cream-cheeſe by 10 or 11 florins.

During the hot ſeaſon, when the milk ſoon turns ſour, the cow-keepers, who graze their cattle on the Alps, make cream-cheeſe; the whole quantity of milk is not, therefore, applied to the making of butter, and the profit is, of conſequence, ſomewhat lower. The cow-keepers, who make cream-cheeſe, very ſeldom ſell the zieger which they obtain, but ſmoke and conſume it, whereby a conſiderable ſaving is made, in regard to bread and other proviſions. From theſe conſiderations, we incline to think, that the average amount of the produce of 9000 cows, during the ſummer, with the neareſt approximation to truth, may be ſtated at 460,000 florins.

As to the 6000 cows, which are wintered in the diſtrict of Innerooden, each of them yields daily, upon an average, two gallons of milk; and, conſequently, during the 25 weeks they are ſtall-fed, 310 gallons.

When the cow-keepers make cream-cheeſe or butter, they obtain a large quantity of whey, which is not left unimproved. Every cow-keeper buys, in ſpring, a number of young pigs, which receive no other drink but whey, which, though it does not make them fat, yet brings them to their full growth, and diſpoſes them to be eaſily fattened. The profit which accrues to the cow-keeper from the ſale of full-grown pigs, which have not coſt them a farthing during the whole ſummer, ought alſo to be added to the proceeds of the milk, which, however great they may appear from the above calculation, yet do not conſtitute the whole profits which the cow-keepers derive from their cows. Several thouſand calves, many lean bullocks, two years old, and a conſiderable number of fattened cows and bullocks, are yearly ſold and exported from the diſtrict of Innerooden; the price of a calf is from five to eight florins, and of a lean bullock, two years old, from ſeven to twelve Louis d'ors. The ſkins of the cows and calves, conſumed within the diſtrict, and the ſalt-petre, which the inhabitants know how to prepare by means of the urine of this cattle, are alſo articles which are exported, and may amount to from 70,000 to 80,000 florins a-year. The total amount of the annual proceeds of the cattle, kept and paſtured in the diſtrict of Innerooden, may, therefore, be eſtimated at from 602,000 to 660,000 florins. To this ſum ſhould be added the produce of the goats and ſheep kept by the inhabitants; but, from want of ſufficient data on the ſubject, we are not able to form any juſt eſtimate of its amount. Young ſheep are bought, in ſpring, for about two or three florins a-head, and ſold again, in autumn, for five florins.

florins. The goats find plenty of wholeſome food on ſuch ſteep and ſtony places as are inacceſſible to black cattle; and, of this milk, large quantities of goat-cheeſe are made by the inhabitants.

The honey, made by the bees of this paſtoral country, is excellent. Common honey is ſold for about two florins a gallon; but the beſt ſort, called country-honey, coſts from three to four florins: it is of a bright yellow colour, and far exceeds, in flavour, the beſt honey of this country.

Although the diſtrict of Innerooden contains the higheſt mountains in the cantons of Apenzel, yet it is not ſufficiently rich in wood to export any conſiderable quantity of that article. The open expoſure of the mountains towards the north, may, perhaps, obſtruct the growth of large forests of pines and larch-trees; yet every diſtrict, ſuch as the borough of Apenzel, Gonten, Haſlen, Schevendi, Brucllifau, &c. poſſeſſes its common foreſt, equally uſed by all the houſekeepers of the diſtrict, under the direction of a forester, appointed by the magiſtrates, to ſuperintend the uſe, and prevent the deſtruction of, the common-wood.

As we are treating here of the articles which the inhabitants of Innerooden ſell to the neighbouring countries, we muſt not omit the ſnails which are fattened in this diſtrict, and exported to Suabia, Bavaria, and Auſtria. On walking, in ſummer, along the banks of the Sitter, you meet with ſmall gardens, where ſuch numerous herds of ſnails are kept, that the noiſe made by the dentieulated jaws of theſe animals, while they are feeding, may be heard at ſeveral paces diſtance. The young ſnails are ſought after every where, gathered, and put in theſe gardens, where they are kept and fed until they take to their ſhells at the approach of winter. In addition to the food which they find on the ground, and on the cherry-trees in the garden, they are fed with ſallad, cabbage, greens, and other leaves, which food renders them very large and fat. At the approach of Lent, the ſnail-mongers pack them up in barrels, and proceed with them to the convents in Suabia, Bavaria, and Auſtria; nay, to Vienna, where they ſell them as exquiſite daintics, and frequently amaſs a ſnug fortune by this trade. The capuchin monks, in the borough of Apenzel, fatten every year a herd of from 40,000 to 80,000 ſnails for their own uſe.

Cheeſe, butter, all ſorts of cattle, ſkins, ſalt-petre, honey, and ſnails, form, therefore, the exports of this ſmall country, for which the inhabitants receive, in exchange, ſuch articles as they want for their ſubſiſtence. As there exiſt neither cuſtom-houſes nor exciſe-offices in the diſtrict of Innerooden, by the entries in whoſe regiſters the exact amount of the exports and imports might be aſcertained, we muſt content ourſelves with eſtimates, founded on ſuch data as may be obtained from other ſources. From theſe it appears, that, adding to the above 600,000 florins the ſum of 300,000 florins, for ſheep, goats, ſnails, ſpun-cotton, and linen, the total amount of the Alp-œconomy, and other induſtrious purſuits of the inhabitants of the diſtrict of Innerooden, may be eſtimated at 900,000 florins, or about 9000l. ſterling: of which ſum, however, a ſmall part only remains in the country, the reſt going to the neighbouring provinces for ſalt, wine, all ſorts of cloathing, leather, iron, copper, glaſs, coffee, &c. Under theſe circumſtances, it muſt be obvious, that the maſs of circulating ſpecie cannot but be very ſmall; for the florin of account is only 2½ ſterling.

On DRUNKENNESS.

IT is in general with whole nations, as with individuals; the more noble and generous they are, ſo much the more moderate are they in the enjoyments of ſenſe; and, on the contrary, the more baſe and ignoble, ſo much the more preponderant and unconquerable is their propenſity to ſenſual pleaſures of the groſſer kinds. One main branch of ſenſuality is an inclination to intoxicating or ſtupefying liquors and drugs; and this inclination augments, in whole nations, allowing for ſome particular exceptions, in equal proportion with the decline of ſuperior mental powers, and the diſpoſition to great virtues and ſignal exploits. Accordingly, all Sclavonian nations have ever been, as in general, more ſenſual, ſo alſo more intemperate in the uſe of ſtrong liquors, than the Not-Sclavonian; and the former are again, in regard to gluttony, beyond all compariſon exceeded by the Mongolian nations.

I here paſs by the Oriental nations; neither ſhall I collect together the univerſal teſtimony of travellers concerning the gluttony of each particular Sclavonian nation, the Poles, the Illyrians, Moldavians, and Vallachians. I confine myſelf principally to the Ruſſians, becauſe I find the moſt expreſs and accurate accounts of them in writers of the higheſt credit, ſufficient to convince every one that the gluttony of the other Not-Sclavonian nations was never ſo great as among the common Ruſſians.

When the elder Gmelin was on his travels through Siberia, between the year 1733 and 1743, there happened no religious feſtival, no civil anniverſary, no family entertainment, which was not celebrated by all who aſſiſted at them by a general intoxication. This rage for drinking in the Ruſſians of Siberia, Gmelin knew not how to compare to any thing but a contagious burning fever, that attacked every age, rank, and ſex, which, though it had its intervals, ſoon returned, at ſtated periods, with equal, or increaſed, fury. This drinking fever always broke out more violently and univerſally on the high feſtivals, and, therefore, alſo in the Chriſtmas week. From Chriſtmas to the Epiphany, and frequently for a week longer, it was extremely rare to ſee a perſon ſober. The Siberians were not ſatisfied with being intoxicated once a-day, but the drinking and the riot continued night and day almoſt inceſſantly. During all this time, it was not poſſible, either by intreaties, or bribes, or by any other means but open violence, to induce artificers and labourers to work; and, when the travellers arrived at any place on this or any the like drinking feſtival, their ſoldiers, and the reſt of their attendants, notwithſtanding all the threats they could employ, got drunk as immoderately and continually as the inhabitants of the place, and they had nothing to do but to wait there in patience till the paroxyſm was over. Not only men, but women likewiſe, frequently drink themſelves to death; and it is affirmed by Bruce, that, in what is called the Butter-week, ſeldom a morning paſſes in Moſcow, but from ten to twelve perſons are found dead in the ſtreets, who have fallen down, and been frozen. Of ſuch mortal intoxications we can the leſs doubt, on reading that a ſingle boor will frequently drink, in one day, brandy to the amount of five rubles, (about 22s. 6d.)

Not leſs licentious than the Chriſtmas week, were the Butter-week, as it is called, or the week before Lent, the Eaſter-week, every ſaint's day, every harveſt or threſhing feaſt, every conſecration of a church, and all other ſolemn occaſions. Such feſtivals and ſolemnities often

followed

followed so close on each other, that they were drunk for a whole month together, particularly in October, from one festival to another. At these times, when the Russians of Siberia were once fallen into this way, it cost them inexplicible efforts to return to their usual way of life, and to be completely drunk only once in about every four days.

The ordinary liquor for this purpose, used by the Russians of Siberia, is bad brandy, and, when this is wanting, a sort of beer, which they frequently render more inebriating by infusing a handful of the *ephedra monostachia*. This herb has the peculiar property of producing such a surprising intoxication, that those who are drunk with it continue singing and capering till they fall down to the ground. When the brandy or the beer is all out, they then guzzle down the dregs, as every thing is of a good taste to them that does but till.

The governor and governor in great towns, and, after their example, the vice-governor and secretary, let no court-holiday, and no namesday or birthday, in their own family, pass unsolemnized. To such festivities, not only the officers, and the higher and lower orders of the clergy, but likewise the most considerable persons in trade, are invited. To the former, the most choice foreign wines are served in abundance; but to the latter, only mead is presented instead of wine, and yet no merchant goes away from table without leaving upon it half a ruble, or a ruble, for the honour of having been feasted at so noble a board, by which custom the expences of the entertainment are greatly diminished. At the tables of the inferior *voivodes*, the brandy is drunk, not out of common wine glasses, but large *stochans* or tumblers, and whoever at such banquets has been the most beastly in his drinking, and in his behaviour, has a rich present sent him the following day. Drunkenness there, at this present day, is so little disgraceful, that it is not taken amiss even in ladies of the best breeding. It is not long ago, that not only common people, but princes and ladies of quality, when sick, would drink whole goblets of brandy instead of the water prescribed them by the physician.

The generality of our readers would scarcely believe, that the Russians can be outdone in drinking by other nations: but they will think quite otherwise when they shall have read the following accounts of the excesses of the negroes and Americans.

All travellers are agreed herein, that, among the negroes, not only men, but also women and children, have an unsurmountable propensity to strong liquors. In Africa, palm-wine, and especially European brandy, and, in the West-Indies, rum, are their favourite drinks. For procuring European brandy, kings sell their subjects, husbands their wives, and parents their children, for slaves to the Europeans. When they have obtained this water of life, or fire-water, as they call it, they seldom leave it till they have seen the end of it. Thus, a negro king continued uninterruptedly drinking for six days and nights, without taking the least food. The negroes usually meet every afternoon in certain public buildings appropriated for that purpose, and fuddle themselves either in brandy, or, for want of it, in palm-wine. When the first calls of thirst are silenced, and the head begins to grow warm, they order the wine to be brought in bottles holding one or two quarts, and continue drinking as long as there is any left. In these drunken carousals, women, and even children of three or four years old, take part, as the capacity of drinking a great deal is esteemed an honourable art. Formerly, the drunkard, who wanted to make a figure,

figure, let two-thirds of the wine run down his beard. If, during their senseless intoxication, they commit murder, or any other act of violence, they, with the utmost composure, take no blame to themselves, but lay the fault on the wine or the brandy.

The Americans, beyond all other nations of their kind, justify the remark, that the slow and stupid savages have never shown greater ingenuity than in the discovery of the art of making inflammatory liquors. There is hardly an eatable fruit, or root, or plant, from which they have not learnt the method of preparing an intoxicating drink; and many of the wildest savages had, previous to the arrival of the Europeans, invented from six to nine several kinds of the strong liquors. The most universal drink of the original Americans, is that which bears the name of *chica*, which, indeed, is prepared a great many different ways, but the most usual is from maize, or Turkish wheat. Some soak the maize in water, even in feculent water. But commonly, it is chewed by old women, and as often by young children, who spit it out altogether into a vessel, where it is left standing till the whole mass has fermented. The Americans give several reasons why the maize is best chewed, and why this mastication should be performed by old women and young children. Namely, they pretend, that it is a common observation, that the chica never more perfectly ferments. Even the Europeans accustom themselves to the chica prepared in this manner; yet they would take care not to drink it, if a living toad were thrown in, and dissolved in it, as Gage saw done with his own eyes among the Indians of Guitamala.

When the Americans have prepared a due quantity of this chica, they invite their friends to a jovial drinking-bout. Indeed, there are particular districts where the women abstain from drinking at these scenes of riot, and, when their husbands have had enough, carefully to put them to rest; but, usually, the women and children take part like the men, in these drunken frolics, and the women even give a good dose of chica to their children at the breast. When the Americans have once begun to carouse, they observe no bounds, but drink till they fall, bereft of their senses, on the earth. The drunkards resist, with all their might, any attempts to carry them off, and return with a kind of fury to the field of battle: and this, says Ulloa, is not peculiar to Americans of any particular districts, but in this they are every where alike. The most violent vomitings not only do not in the least abate the drunken rage of the Americans, but rather inflame it more; and when they are relieved, and somewhat refreshened by it, they fall to it again with redoubled avidity. Such drinking-bouts last not only three or four days, during which every American drinks as much as would fill a large cask, but, at times, for ten or fifteen days, nay, for three or four months, almost without intermission. When any one falls, there he remains, whether in a heavy shower of rain, or in a morass, or in a heap of filth, 'till he comes to himself, without letting any thing disturb him. When a man feels the heat too excessive, he makes great wounds in his head, in the temples, or the breast, or sticks a knife in the calf of the leg, in order to ease himself a little from the consuming fire by a copious loss of blood. It almost always happens, that some of them die from the excessive draughts they take; and still more frequently that they come to bloody conflicts, in which several are either killed or wounded. All acts of manslaughter and maiming committed in fits of drunkenness, appear to the Americans as perfectly

perfectly innocent, and are never revenged, either by the magiſtrate, or by the relations, or even by the wounded perſon himſelf.

Ever ſince the American ſavages have been acquainted with European brandy, or with the rum prepared by the Europeans, their eagerneſs after intoxication is much increaſed by a new incentive. They themſelves confeſs, that the fire-water kills them before their time; that it reduces them to poverty; that it undermines their activity and vigour; but they add, that it is impoſſible for them to abſtain from it, and complain of the Europeans for having introduced among them ſo dangerous and irreſiſtible a liquor. For procuring brandy in South America, they ſell all they have, even their wives and children; and, in northern Louiſiana, it has often happened, that the moſt faithful, and, to all appearance, the moſt ſenſible, Indians, have murdered their maſters at the chace, only for the ſake of getting poſſeſſion of his brandy-bottle. The laborious Indians, who work in the Spaniſh mines, expend, in a few hours, in rum, the half of the money that is paid them every Sunday; and, in the ſame manner, the other Americans, women as well as men, throw away all, or the greateſt part of, the money they earn, and are, therefore, obliged to put up with the moſt wretched habitations, the vileſt food, and the pooreſt covering. When they have drunk out their ſtock of brandy, they beg the Europeans, with tears in their eyes, to give them more bitter water, or demand it with the utmoſt aſſurance. In Peru, an Indian drank to the amount of ſeven peſos, or thirteen bottles of rum, in a very few hours, without feeling any other effects from it but a ſenſeleſs intoxication. Mr. Adair, unable to free himſelf from the importunity of an impudent ſavage for brandy, gave him a large bottle of pepper water. The American drank of this fiery diſtillation till he was almoſt ſuffocated. He was as little diſmayed, however, by theſe painful effects, as another was after a merry-making, though, from the violent agitation of his ſtomach and bowels, he fell breathleſs on the ground. When both had ſomewhat recovered, they broke out in extravagant praiſes of the powerful water and the bountiful donor. Another time, Adair was ſo long perſecuted by a ſavage for brandy, that he was, at laſt, obliged to give him a quart of the ſtrongeſt ſpirit of turpentine. The American preſently gulped it down, began to foam at the mouth, and fell ſenſeleſs to the ground; but was, in a few days, quite recovered by hot-baths and cooling drinks.

Though it is agreed by all travellers, that brandy and the ſmall-pox have committed more ravages in America than the ſword of the Europeans, yet it is no leſs certain, that numberleſs Americans can be guilty of the moſt prodigious exceſſes in drinking, without getting pleuriſies, or other ſickneſſes, the uſual attendants on that practice with us. With all their debauches, as Frazer informs us, they will reach to the age of a hundred years; and, without being bald or grey headed, numbers are ſeen that are a hundred and twenty, or a hundred and thirty, or even of a greater age.

The foregoing facts are ſufficient to convince every one, that the propenſity of the negroes and Americans to intoxicating liquors, is of a kind altogether different from the licentiouſneſs, in that reſpect, of the European nations; and that the former as much exceed the latter in their avidity for inflammatory liquors, as in the capacity of drinking them in ſuch quantities as would infallibly coſt any European his life.

On the CAUSE of the POPULARITY of NOVELS.

THERE is no ſpecies of writing that has been more popular among young readers, ſince its firſt appearance, than the *Novel* or *Romance*, and I have not been able to diſcover a better reaſon for the high favour in which ſuch compoſitions are held, than the tameneſs and inſipidity of common life and common events. Tired of this, we firſt betake ourſelves to the page of hiſtory, but here, although we occaſionally meet with incidents that are ſurpriſing, there is, in general, a forbidding gravity and dignity in the ſtile and manner in which they are related; and, for the moſt part, hiſtory is employed on the actions and adventures of heroes, kings, and ſtateſmen, a claſs of perſons with which we are but little acquainted, and in whoſe ſucceſs young perſons feel but little intereſt.

Finding, therefore, but ſcanty amuſement in theſe grave and regular performances, where it is abſolutely neceſſary that nothing ſhould be related but what is true, and no ornaments appended which did not belong to the original fact, we fly for relief from the ſameneſs of real life to the compoſition called *Novels*. In them we find common things related in an uncommon way, which is preciſely the remedy we have been ſeeking to vary our amuſements. Inſtead, for example, of a young couple walking regularly to church to be married, with their parents' conſent, and their parents walking regularly with them, (an incident ſo common as to occaſion little or no notice,) we have a pair of true lovers, concealing from each other what they both are deſirous to reveal, thwarted in their affection by cruel fathers and mothers, or guardians, beſet with ſpies, their letters intercepted, rooms turned into priſons; and, if an eſcape, uſually called an elopement, be practicable, windows are turned into doors, and a ladder becomes a ſtaircaſe; poſt-horſes are furniſhed with wings, and poſt-boys, of the true Hounſlow-breed, are converted into cupids, while an old battered chaiſe is an hymeneal car.

It is this art of making much out of little that reconciles us to a courſe of novel-reading. We find how tame and inſipid real life is; we awake in the morning, dreſs ourſelves, go out ſhopping or viſiting, and return, in perfect ſafety, to the ſame employments or amuſements this day that we returned to yeſterday, and which will, probably, engage our time to-morrow. It is not remarkable, therefore, if young and active ſpirits become tired of a routine ſo dull and unvarying, and are deſirous of adventures which may diſtinguiſh them from the common herd of neighbours, and give employment for town-talk. Such are to be found in novels, where, in the morning, the hero or heroine is awaked by the ſoft melody of a lute under the window, and, immediately upon the window being opened, the ſound is loſt, and no perſon appears!—In theſe worlds of a new creation, if a young lady ventures to walk beyond the limits of her father's domain, ſhe is either ſeduced by the 'falſe flattering tongue' of ſome gay and gallant Lothario, into a poſt-chaiſe, or more rudely forced into one by a band of ruffians with maſks on their faces, and drawn ſwords in their hands. Not an hour paſſes without ſome incident of this kind, ſo that, if the real world was like the world of romance, we might ſay of the metropolis, with a learned juſtice who has written on the police, 'that there are many thouſands in it who, when they get up in the morning, cannot tell what ſhall befall them in the courſe of the day, or where they ſhall ſleep

ſleep at night.' For ſuch is the ever-varying fate of thoſe who live under the diſpenſations of a romantic imagination.

It might, however, be worth while to enquire, whether the events of romantic life are capable of being realiſed without danger and diſappointment. We are not quite certain, that youth is to be divided into *three* or *four volumes*, and, whatever errors or crimes may be committed, to end in a happy marriage and a great fortune in the *laſt*. Elopements, indeed, have been tried, and they have ſerved to vary the common routine of being aſked at church, or married by a licence; but it has not been found, that ſuch marriages have proved more happy than the old-faſhioned kind—on the contrary, it has been found, that, after a few months or weeks, the parties have been plunged into a ſtate of life more dull and inſipid than before, and which has ended, in more than one recent inſtance, in certain adventures which have led the parties into a ſeparation as *romantic*, and out of the common way, as the elopement itſelf. It muſt, therefore, I am afraid, be concluded, that, however amuſing the adventures of novel-perſonages are, we ought to be very cautious how we attempt to perform them in real life. Our laws, unfortunately, are not compoſed upon the ſyſtem of romance, and I know not where a collection of more ſtern and ſevere critics can be found than in the courts of king's bench, doctors' commons, and the Old Bailey. The lord chancellor, too, I am ſorry to add, is a gentleman of that peculiar way of thinking, as to conſider a door the propereſt part of a houſe for a young lady to walk out at, a ſtair-caſe a more becoming mode of deſcending than a ladder of ropes, and fathers, mothers, or guardians, the beſt adepts at explaining or anſwering the contents of a billet-doux. This may, probably, be owing to his lordſhip's want of taſte, but it is a want of taſte that has been very common, among gentlemen learned in the law, for many years.

But, notwithſtanding the great pains that have been taken, in many hundred late novels, to give a turn and a variety to love affairs, by every mode of croſs-purpoſes and hair-breadth-eſcapes, there muſt be a termination even to theſe, and the common adventures of novels were actually becoming as inſipid as the progreſs of real life, when a bold and ſucceſsful attempt was lately made to enliven theſe narratives by a certain proportion of murders, ghoſts, clanking-chains, dead bodies, ſkeletons, old caſtles, and damp dungeons. Happily for thoſe who are tired with themſelves and all around them, this attempt produced a number of imitations, and we now rarely ſee a novel that is not entirely compoſed of the terrific materials above enumerated.

Murder is certainly a very fruitful topic: it can be contrived in ſo many ways, and, if once we return to the old-faſhioned belief in ghoſts, it is incredible with what eaſe we may increaſe our ſtock of perſonages, for every one mentioned in the work may have a ghoſt, and, living or dead, we may in this way exactly double our amuſement. We may truly ſay, with Macbeth,

——'The times have been,
That, when the brains were out, the man would die,
And there an end: but now, they riſe again,
With twenty mortal murders on their crowns,
And puſh us from our ſtools.'——

And ſurely it is no wonder if our timid females are puſhed from their ſtool, in reading the horrid, barbarous, and bloody, murders, that are now ſerved up for their *amuſement*.

Amuſement! did I ſay?—Yes, certainly, for their *amuſement*. This is the moſt favourable conjecture; for ſurely it never could have entered into the brain of any writer of this deſcription, that our lovely females wanted *inſtruction* how to commit or avoid murders. Amuſement it therefore muſt be, and certainly is amuſement of a very ſingular kind, ſuch as appears to me to be very incompatible with tenderneſs of frame, or purity of mind. What ſhould we think, if a lady, who had the command of an extenſive library, ſhould ranſack the indexes, and reject every page but that which contained an account of a murder? A queſtion then very naturally ariſes, Why are works, entirely compoſed of murders, conſidered as moſt certain of being peruſed? The anſwer to this queſtion I ſhall leave to my readers, and content myſelf with hoping that the preſent faſhion, like all departures from nature and common ſenſe, will have but a ſhort reign.

Still muſt I revert to my original thought, that a miſtaken notion of the dulneſs and ſameneſs of common life ſo often ſends us for relief to the regions of fiction, and, if we go there merely upon the principle of amuſement, we ſhall derive no diſadvantage from peruſing the moſt claſſical productions of this deſcription: but, beyond that, I ſuſpect we ſhall often be deluded by eſtimates of human life and happineſs that are calculated upon falſe foundations. The days of youth are certainly days of curioſity, and, if that is directed to proper objects around us, we ſhall not find that real life is ſo devoid of variety as we imagined, or that there is any abſolute neceſſity for relieving our minds by fabulous narratives. The page of hiſtory, to him whoſe mind has not been weakened by a courſe of ſuperficial reading, will contain more variety and entertainment than the utmoſt ſtretch of fiction could have produced, and we ſhall have the ſuperior ſatisfaction in reflecting, that the inſtruction we receive is well grounded, and that the events which ſurpriſe us are always true, or, at leaſt, probable. Where they are doubtful, the hiſtorian's ſuſpicions prevent our being deceived. This, added to an attentive obſervation of the ſcenes around us, will ſtore the mind with reflections of an infinite variety, and far greater utility, than are to be derived from the wild narratives of the imagination, and we ſhall ſoon be enabled to conclude, upon the ſureſt grounds, that he, to whom real life appears dull, muſt himſelf be a man of dull capacity.

TO PREVENT MOULDINESS IN INK.

MR. EDITOR, This is to inform your correſpondent, L. D. junior, (page 329,) that I have tried two things for the prevention of ink's moulding. Firſt, by adding a ſmall quantity of brandy, which, in ſome meaſure, ſucceeded to my wiſh; but am apprehenſive injures the colour. Second, by putting ſome ſalt to it, which never fails me; in what proportion, my experiments have not yet determined; but am led to imagine about one ounce ſufficient for a quart of ink. If, upon trial, this ſhould be found to ſucceed with L. D. could wiſh he would let the writer of this know, through the medium of the BRITANNIC MAGAZINE; as he learns the miſcellaneous department of this is about to cloſe.

T. FORD.

END OF THE FIFTH VOLUME.

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